1076834

Record of Modification
to the
Troy Sampling and Quality Assurance Project Plan
Field Activities
TFO-00001 (numbered by Data Manager)

Instructions to Requester: **Fax to contacts at bottom of form for review and approval.**
File approved copy with Data Manager at the Troy Field Office (TFO).
Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.
If Modification is Temporary for a Single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one):

- (•) Troy Asbestos Property Evaluation Work Plan
- ( ) Other (Title and approval date): _____

Site-Specific Guidance/SOP (Number and Revision No.) (check one):

- (•) CDM-LIBBY-10, Revision 0 (30-point dust sample collection)
- ( ) CDM-LIBBY-05, Revision 2 (30-point soil sample collection)
- ( ) CDM-LIBBY-06, Revision 1 (Visible Vermiculite Estimation)

Other (Title, Number/Revision): _____

Requester: CATHERINE LECOURS Title: Project Mgr
Company: Tetra Tech EM Inc / DEQ Date: 5-8-07

Description of Modification (attach additional sheets if necessary; state section and page numbers of each document that are affected by the proposed modification): p4 and p5 of SOP p.6 30 aliquot is now 10 aliquot and distribution is 4 accessible, 4 infrequent and 2 inaccessible

Field logbook and page number where Modification is documented (or attach associated correspondence):
N/A

Potential Implications of Modification: less aliquot of dust sample

Duration of Modification (check one):

- ( ) Temporary
  Date(s): _____ AD- _____
  BD(s)- _____ TT(s)- _____
- (•) Permanent (Proposed Text Modification Section) Effective Date: 5-8-07

Proposed Text Modifications in Associated Document (attach additional sheets if necessary):
will indicate modification for TAPE in TAPE-Specific work plan

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

Not Applicable **Reject** **Low Bias** **Estimate** **High Bias** **(No Bias)**

Technical Review and Approval _____ Date: 5-8-07
(DEQ Project Manager or designate)

EPA Review and Approval: _____ Date: 5/8/07
(USEPA RPM or designate)

Revised April 29, 2007

Record of Modification
to the
Troy Sampling and Quality Assurance Project Plan
Field Activities
TFO-00002 (numbered by Data Manager)

Instructions to Requester: **Fax to contacts at bottom of form for review and approval.**
File approved copy with Data Manager at the Troy Field Office (TFO).
Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.
If Modification is Temporary for a Single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one):

- (●) Troy Asbestos Property Evaluation Work Plan
- ( ) Other (Title and approval date): _____

Site-Specific Guidance/SOP (Number and Revision No.) (check one):

- ( ) CDM-LIBBY-10, Revision 0 (30-point dust sample collection)
- ( ) CDM-LIBBY-05, Revision 2 (30-point soil sample collection)
- (●) CDM-LIBBY-06, Revision 1 (Visible Vermiculite Estimation)

Other (Title, Number/Revision): _____

Requester: CATHERINE LECOURS Title: Project Manager
Company: Tetra Tech EM Inc / DEQ Date: 5·8·07

Description of Modification (attach additional sheets if necessary; state section and page numbers of each document that are affected by the proposed modification): maximum # of P.I. is 30 for a single use area, evenly distributed throughout area and corresponds with sample aliquot points

Field logbook and page number where Modification is documented (or attach associated correspondence):
N/A

Potential Implications of Modification: Less visible inspection points for TAPE inspections

Duration of Modification (check one):

- ( ) Temporary
  Date(s): _____ AD-_____
  BD(s)-_____ TT(s)-_____
- (●) Permanent (Proposed Text Modification Section) Effective Date: 5·8·07

Proposed Text Modifications in Associated Document (attach additional sheets if necessary):
will indicate modification for TAPE in TAPE-Specific work plan

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

Not Applicable **Reject** **Low Bias** **Estimate** **High Bias** **(No Bias)**

Technical Review and Approval: Catherine LeCours Date: 5·8·07
(DEQ Project Manager or designate)

EPA Review and Approval: _____ Date: 5/8/07
(USEPA RPM or designate)

Revised April 29, 2007

Record of Modification
to the
Troy Sampling and Quality Assurance Project Plan
Field Activities
TFO-0 0 0 0 3 (numbered by Data Manager)

Instructions to Requester: **Fax to contacts at bottom of form for review and approval.**
File approved copy with Data Manager at the Troy Field Office (TFO).
Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.
If Modification is Temporary for a Single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one):

- (•) Troy Asbestos Property Evaluation Work Plan
- ( ) Other (Title and approval date): _____

Site-Specific Guidance/SOP (Number and Revision No.) (check one):

- (•) CDM-LIBBY-10, Revision 0 (30-point dust sample collection)
- ( ) CDM-LIBBY-05, Revision 2 (30-point soil sample collection)
- ( ) CDM-LIBBY-06, Revision 1 (Visible Vermiculite Estimation)

Other (Title, Number/Revision): _____

Requester: CATHERINE LECOURS Title: Project Manager
Company: Tetra Tech EM Inc / DEQ Date: 7-12-07

Description of Modification (attach additional sheets if necessary; state section and page numbers of each document that are affected by the proposed modification): to utilize the prioritization scheme from the Dust Composite Sampling Pilot Study, Rev 0 dated May 16, 2007 for the TAPE aliquot dust collection

Field logbook and page number where Modification is documented (or attach associated correspondence):
N/A

Potential Implications of Modification: increase probability of well represented dust sample

Duration of Modification (check one):

- ( ) Temporary
  Date(s): _____ AD-_____
  BD(s)-_____ TT(s)-_____
- (•) Permanent (Proposed Text Modification Section) Effective Date: 7-12-07

Proposed Text Modifications in Associated Document (attach additional sheets if necessary):
addition of heirarchy to work plan Section 4.4.2.1

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

Not Applicable **Reject** **Low Bias** **Estimate** **High Bias** **(No Bias)**

Technical Review and Approval: Catherine LeCours Date: 7-12-07
(DEQ Project Manager or designate)

EPA Review and Approval: _____ Date: 7/12/07
(USEPA RPM or designate)

Revised April 29, 2007

Record of Modification
to the
Troy Sampling and Quality Assurance Project Plan
Field Activities

TFO-0 0 0 0 5 (numbered by Data Manager)

Instructions to Requester: **Fax to contacts at bottom of form for review and approval.**
File approved copy with Data Manager at the Troy Field Office (TFO).
Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.
If Modification is Temporary for a Single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one):

- ◉ Troy Asbestos Property Evaluation Work Plan
- ○ Other (Title and approval date): _____

Site-Specific Guidance/SOP (Number and Revision No.) (check one):

- ○ CDM-LIBBY-10, Revision 0 (30-point dust sample collection)
- ○ CDM-LIBBY-05, Revision 2 (30-point soil sample collection)
- ○ CDM-LIBBY-06, Revision 1 (Visible Vermiculite Estimation)

Other (Title, Number/Revision): _____

Requester: CATHERINE LeCOURS Title: PROJECT MANAGER
Company: Tetra Tech EM Inc / DEQ Date: 8-1-07

Description of Modification (attach additional sheets if necessary; state section and page numbers of each document that are affected by the proposed modification): Section 4.4.2 of TPE, only collect dust samples if visible vermic in exterior or interior, former mine or ARD are affirmative.

Field logbook and page number where Modification is documented (or attach associated correspondence):
N/A

Potential Implications of Modification: not collect dust samples at all properties

Duration of Modification (check one):

- ○ Temporary
  - Date(s): _____ AD-_____
  - BD(s)-_____ TT(s)-_____
- ◉ Permanent (Proposed Text Modification Section) Effective Date: 8-1-07

Proposed Text Modifications in Associated Document (attach additional sheets if necessary): N/A

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

(Not Applicable) Reject Low Bias Estimate High Bias No Bias

Technical Review and Approval: _____ Date: 8-1-07
(DEQ Project Manager or designate)

EPA Review and Approval: _____ Date: 8-1-07
(USEPA RPM or designate)

Revised April 29, 2007

Record of Modification
to the
Troy Sampling and Quality Assurance Project Plan
Field Activities
TFO-0 0 0 0 6 (numbered by Data Manager)

Instructions to Requester: **Fax to contacts at bottom of form for review and approval.**
File approved copy with Data Manager at the Troy Field Office (TFO).
Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.
If Modification is Temporary for a Single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one):

- (●) Troy Asbestos Property Evaluation Work Plan
- ( ) Other (Title and approval date): _____

Site-Specific Guidance/SOP (Number and Revision No.) (check one):

- ( ) CDM-LIBBY-10, Revision 0 (30-point dust sample collection)
- ( ) CDM-LIBBY-05, Revision 2 (30-point soil sample collection)
- ( ) CDM-LIBBY-06, Revision 1 (Visible Vermiculite Estimation)

Other (Title, Number/Revision): _____

Requester: CATHERINE LeCOURS Title: PROJECT MANAGER
Company: Tetra Tech EM Inc / DEQ Date: 8-23-07

Description of Modification (attach additional sheets if necessary; state section and page numbers of each document that are affected by the proposed modification): Section 4.4.2 of TAPE, Supercedes TFO-00005 and reverts dust sampling to all buildings

Field logbook and page number where Modification is documented (or attach associated correspondence): N/A

Potential Implications of Modification: collect dust samples at all buildings

Duration of Modification (check one):

- ( ) Temporary
  - Date(s): _____ AD-_____
  - BD(s)-_____ TT(s)-_____
- (●) Permanent (Proposed Text Modification Section) Effective Date: 8-23-07

Proposed Text Modifications in Associated Document (attach additional sheets if necessary): N/A

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

(Not Applicable) Reject Low Bias Estimate High Bias No Bias

Technical Review and Approval: _____ Date: 8-23-07
(DEQ Project Manager or designate)

EPA Review and Approval: _____ Date: 8-23-07
(USEPA RPM or designate)

Revised April 29, 2007

Record of Modification
to the
Troy Sampling and Quality Assurance Project Plan
Field Activities
TFO- 0 0 0 0 6 (numbered by Data Manager)

Instructions to Requester: **Fax to contacts at bottom of form for review and approval.**
File approved copy with Data Manager at the Troy Field Office (TFO).
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Project Work Plan/QAPP (check one):

- (●) Troy Asbestos Property Evaluation Work Plan
- ( ) Other (Title and approval date): _____

Site-Specific Guidance/SOP (Number and Revision No.) (check one):

- ( ) CDM-LIBBY-10, Revision 0 (30-point dust sample collection)
- ( ) CDM-LIBBY-05, Revision 2 (30-point soil sample collection)
- ( ) CDM-LIBBY-06, Revision 1 (Visible Vermiculite Estimation)

Other (Title, Number/Revision): _____

Requester: CATHERINE LeCOUAS Title: PROJECT MANAGER
Company: Tetra Tech EM Inc / DEQ Date: 8-23-07

Description of Modification (attach additional sheets if necessary; state section and page numbers of each document that are affected by the proposed modification): Section 4.4.2 of TAPE, supercedes TFO-00005 and reverts dust sampling to all buildings

Field logbook and page number where Modification is documented (or attach associated correspondence): N/A

Potential Implications of Modification: collect dust samples at all buildings

Duration of Modification (check one):

- ( ) Temporary
  - Date(s): _____ AD- _____
  - BD(s)- _____ TT(s)- _____
- (●) Permanent (Proposed Text Modification Section) Effective Date: 8-23-07

Proposed Text Modifications in Associated Document (attach additional sheets if necessary): N/A

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

(Not Applicable) Reject Low Bias Estimate High Bias No Bias

Technical Review and Approval: _____ Date: 8-23-07
(DEQ Project Manager or designate)

EPA Review and Approval: _____ Date: 8-23-07
(USEPA RPM or designate)

Revised April 29, 2007

Record of Modification
to the
Troy Sampling and Quality Assurance Project Plan
Field Activities
TFO-00007 (numbered by Data Manager)

Instructions to Requester: **Fax to contacts at bottom of form for review and approval.**
File approved copy with Data Manager at the Troy Field Office (TFO).
Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.
If Modification is Temporary for a Single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one):

- ◉ Troy Asbestos Property Evaluation Work Plan through SOP change
- ○ Other (Title and approval date): _____

Site-Specific Guidance/SOP (Number and Revision No.) (check one):

- ○ CDM-LIBBY-10, Current Revision (30-point dust sample collection)
- ◉ CDM-LIBBY-05, Current Revision (30-point soil sample collection)
- ○ CDM-LIBBY-06, Current Revision (Visible Vermiculite Estimation)

Other (Title, Number/Revision): _____

Requester: CATHERINE LeCOURS Title: PROJECT MGR.
Company: Tetra Tech EM Inc DEQ Date: 11.15.07

Description of Modification (attach additional sheets if necessary; state section and page numbers of each document that are affected by the proposed modification): Section 4 of SOP c
Collect soil samples in SLA's with visible vermic based on higher frequency of homeowner purchase / potting soil

Field logbook and page number where Modification is documented (or attach associated correspondence):
N/A

Potential Implications of Modification: ~~not clear~~ further characterization of SLA's

Duration of Modification (check one):

- ○ Temporary
  - Date(s): _____ AD- _____
  - BD(s)- _____ TT(s)- _____
- ◉ Permanent (Proposed Text Modification Section) Effective Date: 11.16.07

Proposed Text Modifications in Associated Document (attach additional sheets if necessary): _____

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

(Not Applicable) **Reject** **Low Bias** **Estimate** **High Bias** **No Bias**

Technical Review and Approval: Catherine LeCours Date: 11.16.07
(DEQ Project Manager or designate)

EPA Review and Approval: _____ Date: 11/16/07
(USEPA RPM or designate)

Revised April 29, 2007

Record of Modification
to the
Troy Sampling and Quality Assurance Project Plan
Field Activities
TFO – 0 0 0 0 8 (numbered by Data Manager)

Instructions to Requester: **Fax to contacts at bottom of form for review and approval.**
File approved copy with Data Manager at the Troy Field Office (TFO).
Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.
If Modification is Temporary for a Single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one):

- ● Troy Asbestos Property Evaluation Work Plan
- ○ Other (Title and approval date):_____

Site-Specific Guidance/SOP (Number and Revision No.) (check one):

- ○ CDM-LIBBY-10, Current Revision (30-point dust sample collection)
- ○ CDM-LIBBY-05, Current Revision (30-point soil sample collection)
- ○ CDM-LIBBY-06, Current Revision (Visible Vermiculite Estimation)

Other (Title, Number/Revision): _____

Requester: Catherine LeCours Title: Project Manager
Company: Montana DEQ Date: 04/29/2008

Description of Modification (attach additional sheets if necessary; state section and page numbers of each document that are affected by the proposed modification): See following pages – revisit of select parcels from the 2007 inspections for confirmation and description of visible vermiculite in use areas and sampling of use areas

Field logbook and page number where Modification is documented (or attach associated correspondence):

Potential Implications of Modification: _____

Duration of Modification (check one):

- ○ Temporary
  - Date(s):_____ AD-_____
  - BD(s)-_____ TT(s)-_____
- ● Permanent (Proposed Text Modification Section) Effective Date: May 8, 2008

Proposed Text Modifications in Associated Document (attach additional sheets if necessary):_____

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

Not Applicable **Reject** **Low Bias** **Estimate** **High Bias** **No Bias**

Technical Review and Approval: Catherine LeCours Date: May 8, 2008
(DEQ Project Manager or designate)

EPA Review and Approval: Kathryn S. Hernacki Date: May 13, 2008
(*USEPA RPM or designate*)

RECORD OF MODIFICATION
TFO-00008

TO THE

TROY ASBESTOS PROPERTY EVALUATION WORK PLAN

CONFIRMATION AND DESCRIPTION OF VISIBLE VERMICULITE IN USE AREAS
AND
SAMPLING OF SPECIFIC USE AREAS
Troy Operable Unit Number 7
of the Libby Asbestos Superfund Site

Prepared for:

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
Remediation Division
P.O. Box 200901
Helena, Montana 59620

Contract Number 402026
Task Order Number 3 & 20

Prepared by:

TETRA TECH EM INC.
Power Block Building, Suite 612
7 West 6th Avenue
Helena, Montana 59601
(406) 442-5588

May 13, 2008

CONFIRMATION AND DESCRIPTION OF VISIBLE VERMICULITE IN USE AREAS AND SAMPLING OF SPECIFIC USE AREAS

As part of the Troy Asbestos Property Evaluation (TAPE) project 2008 field season, Tetra Tech will complete an inspection and/or collect a soil sample for approximately 462 Troy Operable Unit 7 (OU7) parcels that contain approximately 1,743 Use Areas for confirmation, semi-quantification, and description of visible vermiculite in the exterior soils and collection of soil samples from Specific Use Areas (SUA). **Table 1** provides the number of OU7 parcels and Use Areas to be inspected and sampled. The primary reasons for these inspections and additional sampling will be to address:

(a) the poor correlation between the PLM-VE analytical results and the visible vermiculite observations recorded at Use Areas in OU7 through the confirmation and semi-quantification of the presence or absence of visible vermiculite in Use Areas inspected in 2007,

(b) the need for soil samples from all SUAs as documented in Record of Modification TFO-00007 through the collection of samples from SUAs not previously sampled, and

(c) the accurate description of visible vermiculite observed and reported as "store purchased potting soil" in order to confirm the relationship between vermiculite observed in "potting soil" and analytical results in OU7 that may differ from that relationship as observed in OU4 through documentation of such descriptions during the confirmation and sampling identified above in items (a) and (b).

TABLE 1: Number of Troy Parcels and Use Areas to be Inspected and Sampled

Objectives	Number of Parcels	Number of Use Areas (excluding Non Use Areas)
One: Confirm and semi-quantify the presence or absence of visible vermiculite in Use Areas [item (a) above] and accurately describe the visible vermiculite if present [item (c) above]	462	1,743
Two: Collect soil samples from SUAs not sampled in 2007 [item (b) above]	115	144
Total Unique Numbers (not additive; some parcels/Use Areas under both objectives)	**462**	**1,743**

Two objectives were developed to determine the types and numbers of parcels and Use Areas to inspect and sample.

Objective One: **Confirm and semi-quantify the presence or absence of visible vermiculite in Use Areas and accurately describe the visible vermiculite if present.** The number of parcels to inspect was derived by subtracting the sum of the parcels that would be revisited because they meet one of the emergency removal criteria[1] requiring a pre-design inspection (PDI) plus the parcels with only Non Use Areas (essentially undeveloped properties) from 535, the total number of parcels inspected during 2007. The equation below provides a mathematical expression for this determination:

Parcels for Inspection = 535 – (Parcels meeting removal criteria[1] + Parcels with only Non Use Areas)

Objective Two: **Collect soil samples from SUAs sampled in 2007.** Based on preliminary data from 2007, DEQ, in consultation with EPA, modified the sampling protocol to include a soil sample from all SUAs, regardless of presence or absence of visible vermiculite. (Please see Record of Modification TFO-00007.) Therefore, DEQ has directed Tetra Tech to collect soil samples from SUAs not sampled in 2007.

Tetra Tech's approach for completing these objectives includes training six Tetra Tech TAPE field staff plus three TAPE managers (the Field Team Leader and two quality assurance [QA] managers) to accurately recognize, identify and semi-quantify visible vermiculite in exterior soils, if present. These nine Tetra Tech individuals will be trained by two experienced CDM field persons for approximately four days and will be known as Tetra Tech's Visible Vermiculite (VV) Core team members. The six TAPE field staff will be in the field more than 50 percent of the field season and four of the six will be working on TAPE inspections 100 percent of the time. The four days of training inspections will provide the opportunity for each Tetra Tech VV Core team member to work side by side with CDM, asking questions and learning the skills necessary to identify and semi-quantitatively assess the amount visible vermiculite present. On Day 1, the nine Tetra Tech VV Core team members will meet with CDM staff for up to two hours to go over the basics and get ready for first site visit. The group will be divided into two teams with one CDM person for each team. Each team will visit two to three Troy parcels on Day 1. Days 2, 3, and 4 will have similar schedules with each of the two teams visiting two to three Troy parcels per day depending on the size of parcels and the number of Use Areas. Tetra Tech will identify the training parcels, in consultation with CDM, and schedule the inspections with the property owners. The Troy parcels visited during the four training days will include a majority of parcels where visible vermiculite was recorded during the 2007 TAPE inspections. There will be a mixture of parcels with visible vermiculite at multiple locations and some with visible vermiculite only in distinct, small areas. At least

[1] Concentration of Libby asbestos in soil greater than or equal to 1 percent of sample volume.

two Troy parcels (one for each team) will have no exterior triggers for cleanup. The 2007 inspection and analytical results for these Troy parcels will not be provided to the Tetra Tech VV Core team members prior to the training inspections so that there will be no preconceived ideas or biases. Later during the 2008 field season, qualified CDM staff may periodically spend one or two days with the TAPE inspection teams to ensure the TAPE teams are identifying and documenting visible vermiculite consistent with CDM-LIBBY-06 (Appendix B to the TAPE Work Plan). A TAPE field team schedule will be provided to Volpe and CDM so audits may be planned accordingly.

After Tetra Tech completes approximately 100 parcel inspections for Objective One, the visible vermiculite results and descriptions from 2008 will be summarized and compared to the results of the visible vermiculite inspections and descriptions of 2007 from those same Use Areas. The results' comparisons will be reported to the DEQ and EPA and a meeting will be scheduled with all parties to determine the necessity of continuing with the remaining Objective One inspections. Tetra Tech will inspect all parcels identified for Objective Two, and complete all activities in Objective One for those parcels, regardless of the results of the comparison described above. Tetra Tech will continue to conduct the 2008 TAPE inspections for Troy parcels, including inspections of Use Areas for visible vermiculite and the description of such vermiculite, as described in the TAPE Work Plan (Tetra Tech, July 2007) as modified. Tetra Tech will bring on additional staff, if needed, to complete the necessary number of scheduled 2008 TAPE inspections, plus the visible vermiculite inspections and sampling of Use Areas. Tetra Tech will ensure that all new 2008 TAPE inspection teams have at least one Tetra Tech VV Core team member to verify the presence or absence of visual vermiculite and describe the vermiculite in the Use Area soils. Tetra Tech believes that all scheduled TAPE 2008 inspections and these additional inspections and sampling will be completed on time and within the estimated 2008 budget because of the following reasons and protocol modifications to Tetra Tech's 2008 field efforts:

1. Tetra Tech will staff the 2008 field team with approximately 60 percent (6 out of 10) dedicated and season-long field team members who will reside in Troy for the entire field season. Dedicated field staff will provide more experience and consistency for making visual field determinations, such as the identification of visible vermiculite in Use Area soils.
2. TAPE inspections during 2007 typically averaged 2 to 4 hours to complete (depending on size of parcel, number of inspectors [2 or 3], and number of buildings). Throughout the 2007 summer field season there were many shorter periods of time (30 to 90 minutes) when field crews did not have a scheduled TAPE inspection, but were able to "fit in" a less labor-intensive exterior only TAPE inspection (for example, open space, undeveloped properties) or re-visit parcels due to protocol and data collection modifications. The majority of these smaller, easily scheduled, short, fill-in efforts were completed during 2007. Completing the activities for Objectives One and Two may take from approximately 20 minutes up to a few hours (depending on size of parcel, and travel time to and from the site) and will be easy to fit in and complete on a regular fill-in basis.

Use Areas, except Non Use Areas, will be inspected for visible vermiculite in the soil and surface materials, semi-quantitatively assessed, and sampled (if necessary). For each inspection, the field team will bring along: (1) copies of the field sketches from 2007; (2) field forms for recording inspection data; and (3) field equipment to conduct the visible vermiculite inspection and to collect the soil samples.

Use Areas will be inspected and sampled using the same overriding procedures as the 2007 TAPE inspections, as modified, except a hand lens or magnifying glass will be used to better observe and identify small pieces of vermiculite in the Use Area soils or surface materials Each soil aliquot will be examined for the presence of visible vermiculite and the amount of vermiculite will be semi-quantified as none, low, intermediate, or high using the procedures defined in CDM-LIBBY-06 (Appendix B to the TAPE Work Plan) and accurately described. The Use Area will be closely inspected for the presence of visible vermiculite, but the soil aliquot will not be placed in a plastic bag or bowl for compositing or sampling, unless necessary to meet Objective Two. After careful inspection for visible vermiculite, each soil aliquot will be returned to its approximate original location.

To minimize field recording time and file transfer time, the inspection results (none, low, intermediate, high, description, and sample identification number) will be recorded in a tabular format on field forms created specifically for these activities. The PDAs will not be used to enter data and GPS locations will not be collected for these inspections. At the end of each day that an inspection is performed, the tabulated results will be entered into Scribe by the sample database coordinator. A second inspection property sketch will be prepared for TAPE parcels that have Use Area changes (including Use Areas that no longer exist), different Use Area boundaries, or if visible vermiculite was observed from new or different locations during the inspection. If the parcel Use Areas are identical to those shown on the original 2007 TAPE inspection sketch and no new visible vermiculite is observed, only the notes and details of the inspection will be recorded. The 2008 inspection field team may elect to photo-document specific conditions or changes to the parcel, especially if visible vermiculite is found during the inspection. All new photographs will be recorded on the field forms, downloaded and saved into the Troy parcel electronic file. All inspection field forms will also be scanned and saved into the Troy parcel electronic file. Tetra Tech will manage the 2008 inspection data and any changes to the 2007 inspection data for visible vermiculite and sampling according to the approved TAPE Data Management Plan.

Record of Modification
to the
Troy Sampling and Quality Assurance Project Plan
Field Activities
TFO - 0 0 0 0 9 (numbered by Data Manager)

Instructions to Requester: **Fax to contacts at bottom of form for review and approval.**
File approved copy with Data Manager at the Troy Field Office (TFO).
Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.
If Modification is Temporary for a Single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one)**:**

- ● Troy Asbestos Property Evaluation Work Plan
- ○ Other (Title and approval date):_____

Site-Specific Guidance/SOP (Number and Revision No.) (check one)**:**

- ○ CDM-LIBBY-10, Current Revision (30-point dust sample collection)
- ○ CDM-LIBBY-05, Current Revision (30-point soil sample collection)
- ○ CDM-LIBBY-06, Current Revision (Visible Vermiculite Estimation)

Other (Title, Number/Revision): _____

Requester: Catherine LeCours Title: Project Manager
Company: DEQ Date: June 3, 2008

Description of Modification (attach additional sheets if necessary; state section and page numbers of each document that are affected by the proposed modification): Collect "field split" samples only when Use Area contains sufficient volume. Split will involve collecting double the volume of soil, homogenizing in single bowl, filling two separate baggies and identifying with two separate sample identification numbers, referenced to each other in Scribe.

Field logbook and page number where Modification is documented (or attach associated correspondence):
_____

Potential Implications of Modification: None
_____

Duration of Modification (check one):

- ○ Temporary
  Date(s):_____ AD-_____
  BD(s)-_____ TT(s)-_____
- ● Permanent (Proposed Text Modification Section) Effective Date: June 4, 2008

Proposed Text Modifications in Associated Document (attach additional sheets if necessary): Split samples will only be collected for a limited time, therefore no text changes are necessary.

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

Not Applicable **Reject** **Low Bias** **Estimate** **High Bias** ***No Bias***

Technical Review and Approval: Catherine LeCours Date: 6-05-08
(DEQ Project Manager or designate)

EPA Review and Approval: Kristin S. Hermann Date: 6/05/08
(USEPA RPM or designate)

Revised April 29, 2007

Record of Modification
to the
Troy Sampling and Quality Assurance Project Plan
Field Activities
TFO – 0 0 0 1 0 (numbered by Data Manager)

Instructions to Requester: **Fax to contacts at bottom of form for review and approval.**
File approved copy with Data Manager at the Troy Field Office (TFO).
Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.
If Modification is Temporary for a Single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one)**:**

- ● Troy Asbestos Property Evaluation Work Plan
- ○ Other (Title and approval date):_____

Site-Specific Guidance/SOP (Number and Revision No.) (check one)**:**

- ○ CDM-LIBBY-10, Current Revision (30-point dust sample collection)
- ○ CDM-LIBBY-05, Current Revision (30-point soil sample collection)
- ○ CDM-LIBBY-06, Current Revision (Visible Vermiculite Estimation)

Other (Title, Number/Revision): _____

Requester: Catherine LeCours Title: Project Manager
Company: Montana DEQ Date: June 13, 2008

Description of Modification (attach additional sheets if necessary; state section and page numbers of each document that are affected by the proposed modification): Void TFO-00009 (no longer collect "field split" soil samples) and increase soil sample volume by 50%.

Field logbook and page number where Modification is documented (or attach associated correspondence):
_____

Potential Implications of Modification: None.

Duration of Modification (check one):

- ○ Temporary
  Date(s):_____ AD-_____
  BD(s)-_____ TT(s)-_____
- ● Permanent (Proposed Text Modification Section) Effective Date: June 13, 2008

Proposed Text Modifications in Associated Document (attach additional sheets if necessary):_____
_____
_____

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

Not Applicable **Reject** **Low Bias** **Estimate** **High Bias** ***No Bias***

Technical Review and Approval: Catherine LeCours Date: 6-13-08
(DEQ Project Manager or designate)

EPA Review and Approval: Kathryn S. Hernacki Date: 6-14-08
(USEPA RPM or designate)

Revised April 29, 2007

Record of Modification

to the

Troy Sampling and Quality Assurance Project Plan

Field Activities

TFO – 0 0 0 0 8 (numbered by Data Manager)

Instructions to Requester: **Fax to contacts at bottom of form for review and approval.**
File approved copy with Data Manager at the Troy Field Office (TFO).
Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.
If Modification is Temporary for a Single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one)**:**

- ● Troy Asbestos Property Evaluation Work Plan
- O Other (Title and approval date):_____

Site-Specific Guidance/SOP (Number and Revision No.) (check one)**:**

- O CDM-LIBBY-10, Current Revision (30-point dust sample collection)
- O CDM-LIBBY-05, Current Revision (30-point soil sample collection)
- O CDM-LIBBY-06, Current Revision (Visible Vermiculite Estimation)

Other (Title, Number/Revision): _____

Requester: Catherine LeCours Title: Project Manager

Company: Montana DEQ Date: 04/29/2008

Description of Modification (attach additional sheets if necessary; state section and page numbers of each document that are affected by the proposed modification): See following pages – revisit of select parcels from the 2007 inspections for confirmation and description of visible vermiculite in use areas and sampling of use areas

Field logbook and page number where Modification is documented (or attach associated correspondence):

Potential Implications of Modification: _____

Duration of Modification (check one):

- O Temporary

  Date(s):_____ AD-_____

  BD(s)-_____ TT(s)-_____

- ● Permanent (Proposed Text Modification Section) Effective Date: May 8, 2008

Proposed Text Modifications in Associated Document (attach additional sheets if necessary):_____

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

Not Applicable **Reject** **Low Bias** **Estimate** **High Bias** **No Bias**

Technical Review and Approval: Catherine LeCours Date: May 8, 2008
(DEQ Project Manager or designate)

EPA Review and Approval: _____ Date:_____
(*USEPA RPM or designate*)

RECORD OF MODIFICATION
TFO-00008

TO THE

TROY ASBESTOS PROPERTY EVALUATION WORK PLAN

CONFIRMATION AND DESCRIPTION OF VISIBLE VERMICULITE IN USE AREAS
AND
SAMPLING OF SPECIFIC USE AREAS
Troy Operable Unit Number 7
of the Libby Asbestos Superfund Site

Prepared for:

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
Remediation Division
P.O. Box 200901
Helena, Montana 59620

Contract Number 402026
Task Order Number 3 & 20

Prepared by:

TETRA TECH EM INC.
Power Block Building, Suite 612
7 West 6th Avenue
Helena, Montana 59601
(406) 442-5588

May 8, 2008

CONFIRMATION AND DESCRIPTION OF VISIBLE VERMICULITE IN USE AREAS AND SAMPLING OF SPECIFIC USE AREAS

As part of the Troy Asbestos Property Evaluation (TAPE) project 2008 field season, Tetra Tech will complete an inspection and/or collect a soil sample for approximately 437 Troy Operable Unit 7 (OU7) parcels that contain approximately 1,608 Use Areas for confirmation and description of visible vermiculite in the exterior soils and collection of soil samples from Specific Use Areas (SUA). **Table 1** provides the number of OU7 parcels and Use Areas to be inspected and sampled. The primary reasons for these inspections and additional sampling will be to address:

(a) the poor correlation between the PLM-VE analytical results and the visible vermiculite observations recorded at Use Areas in OU7 through the confirmation and semi-quantification of the presence or absence of visible vermiculite in Use Areas inspected in 2007,

(b) the need for soil samples from all SUAs as documented in Record of Modification TFO-00007 through the collection of samples from SUAs not previously sampled, and

(c) the accurate description of visible vermiculite observed and reported as "store purchased potting soil" in order to confirm the relationship between vermiculite observed in "potting soil" and analytical results in OU7 that may differ from that relationship as observed in OU4 through documentation of such descriptions during the confirmation and sampling identified above in items (a) and (b).

TABLE 1: Number of Troy Parcels and Use Areas to be Inspected and Sampled

Objectives	Number of Parcels	Number of Use Areas (excluding Non Use Areas)
One: Confirm the presence or absence of visible vermiculite in Use Areas [item (a) above] and accurately describe the visible vermiculite if present [item (c) above]	413	1,463
Two: Collect soil samples from SUAs not sampled in 2007 [item (b) above]	115	144
Total Unique Numbers (not additive; some parcels/Use Areas under both objectives)	**437**	**1,607**

Two objectives were developed to determine the types and numbers of parcels and Use Areas to inspect and sample.

Objective One: **Confirm the presence or absence of visible vermiculite in Use Areas and accurately describe the visible vermiculite if present.** The number of parcels to inspect was derived by subtracting the sum of the parcels that would be revisited because they meet at least one of three emergency removal criteria[1] requiring a pre-design inspection (PDI) plus the parcels with only Non Use Areas (essentially undeveloped properties) from 535, the total number of parcels inspected during 2007. The equation below provides a mathematical expression for this determination:

Parcels for Inspection = 535 – (Parcels meeting removal criteria[1] + Parcels with only Non Use Areas)

Objective Two: **Collect soil samples from SUAs sampled in 2007.** Based on preliminary data from 2007, DEQ, in consultation with EPA, modified the sampling protocol to include a soil sample from all SUAs, regardless of presence or absence of visible vermiculite. (Please see Record of Modification TFO-00007.) Therefore, DEQ has directed Tetra Tech to collect soil samples from SUAs not sampled in 2007.

Tetra Tech's approach for completing these objectives includes training six Tetra Tech TAPE field staff plus three TAPE managers (the Field Team Leader and two quality assurance [QA] managers) to accurately recognize and identify visible vermiculite in exterior soils, if present. These nine Tetra Tech individuals will be trained by two experienced CDM field persons for approximately four days and will be known as Tetra Tech's Visible Vermiculite (VV) Core team members. The six TAPE field staff will be in the field more than 50 percent of the field season and four of the six will be working on TAPE inspections 100 percent of the time. The four days of training inspections will provide the opportunity for each Tetra Tech VV Core team member to work side by side with CDM, asking questions and learning the skills necessary to identify and semi-quantitatively assess the amount visible vermiculite present. On Day 1, the nine Tetra Tech VV Core team members will meet with CDM staff for up to two hours to go over the basics and get ready for first site visit. The group will be divided into two teams with one CDM person for each team. Each team will visit two to three Troy parcels on Day 1. Days 2, 3, and 4 will have similar schedules with each of the two teams visiting two to three Troy parcels per day depending on the size of parcels and the number of Use Areas. Tetra Tech will identify the training parcels, in consultation with CDM, and schedule the inspections with the property owners. The Troy parcels visited during the four training days will include a majority of parcels where visible vermiculite was recorded during the 2007 TAPE inspections. There will be a mixture of parcels with visible vermiculite at multiple locations

[1] (a) visual confirmation of vermiculite insulation; (b) concentration of Libby asbestos in soil greater than or equal to 1 percent of sample volume; or (c) concentration of Libby asbestos in an indoor dust sample greater than 5,000 structures per square centimeter.

and some with visible vermiculite only in distinct, small areas. At least two Troy parcels (one for each team) will have no exterior triggers for cleanup. The 2007 inspection and analytical results for these Troy parcels will not be provided to the Tetra Tech VV Core team members prior to the training inspections so that there will be no preconceived ideas or biases. Later during the 2008 field season, qualified CDM staff may periodically spend one or two days with the TAPE inspection teams to ensure the TAPE teams are identifying and documenting visible vermiculite consistent with CDM-LIBBY-06 (Appendix B to the TAPE Work Plan). A TAPE field team schedule will be provided to Volpe and CDM so audits may be planned accordingly.

After Tetra Tech completes approximately 100 parcel inspections for Objective One, the visible vermiculite results and descriptions from 2008 will be summarized and compared to the results of the visible vermiculite inspections and descriptions of 2007 from those same Use Areas. The results' comparisons will be reported to the DEQ and EPA and a meeting will be scheduled with all parties to determine the necessity of continuing with the remaining Objective One inspections. Tetra Tech will inspect all parcels identified for Objective Two, and complete all activities in Objective One for those parcels, regardless of the results of the comparison described above. Tetra Tech will continue to conduct the 2008 TAPE inspections for Troy parcels, including inspections of Use Areas for visible vermiculite and the description of such vermiculite, as described in the TAPE Work Plan (Tetra Tech, July 2007) as modified. Tetra Tech will bring on additional staff, if needed, to complete the necessary number of scheduled 2008 TAPE inspections, plus the visible vermiculite inspections and sampling of Use Areas. Tetra Tech will ensure that all new 2008 TAPE inspection teams have at least one Tetra Tech VV Core team member to verify the presence or absence of visual vermiculite and describe the vermiculite in the Use Area soils. Tetra Tech believes that all scheduled TAPE 2008 inspections and these additional inspections and sampling will be completed on time and within the estimated 2008 budget because of the following reasons and protocol modifications to Tetra Tech's 2008 field efforts:

1. Tetra Tech will staff the 2008 field team with approximately 60 percent (6 out of 10) dedicated and season-long field team members who will reside in Troy for the entire field season. Dedicated field staff will provide more experience and consistency for making visual field determinations, such as the identification of visible vermiculite in Use Area soils.
2. TAPE inspections during 2007 typically averaged 2 to 4 hours to complete (depending on size of parcel, number of inspectors [2 or 3], and number of buildings). Throughout the 2007 summer field season there were many shorter periods of time (30 to 90 minutes) when field crews did not have a scheduled TAPE inspection, but were able to "fit in" a less labor-intensive exterior only TAPE inspection (for example, open space, undeveloped properties) or re-visit parcels due to protocol and data collection modifications. The majority of these smaller, easily scheduled, short, fill-in efforts were completed during 2007. Completing the activities for Objectives One and Two may take from

approximately 20 minutes up to a few hours (depending on size of parcel, and travel time to and from the site) and will be easy to fit in and complete on a regular fill-in basis.

Use Areas, except Non Use Areas, will be inspected for visible vermiculite in the soil and surface materials and sampled (if necessary). For each inspection, the field team will bring along: (1) the results of the 2007 inspection; (2) copies of the logbook entries and sketches; and (3) field equipment to conduct the visible vermiculite inspection and to collect the soil samples.

Use Areas will be inspected and sampled using the same overriding procedures as the 2007 TAPE inspections, as modified, except a hand lens or magnifying glass will be used to better observe and identify small pieces of vermiculite in the Use Area soils or surface materials Each soil aliquot will be examined for the presence of visible vermiculite and the amount of vermiculite will be categorized as none, low, intermediate, or high using the procedures defined in CDM-LIBBY-06 (Appendix B to the TAPE Work Plan) and accurately described. . The number of soil aliquot visible vermiculite observations for each Use Area will be the same for the 2008 inspection as was completed during the 2007 inspection of that Use Area. The Use Area will be closely inspected for the presence of visible vermiculite, but the soil aliquot will not be placed in a plastic bag or bowl for compositing or sampling, unless necessary to meet Objective Two. After careful inspection for visible vermiculite, each soil aliquot will be returned to its approximate original location.

To minimize field recording time and file transfer time, the inspection results (none, low, intermediate, high, description, and sample identification number) will be recorded in a tabular format on field forms created especially for these activities. The PDAs will not be used to enter data and GPS locations will not be collected for these inspections. At the end of each day that an inspection is performed, the tabulated results will be entered into Scribe by the sample database coordinator. A second inspection property sketch will be prepared for TAPE parcels that have Use Area changes (including Use Areas that no longer exist), different Use Area boundaries, or if visible vermiculite was observed from new or different locations during the inspection. If the parcel Use Areas are identical to those shown on the original 2007 TAPE inspection sketch and no new visible vermiculite is observed, only the notes and details of the inspection will be recorded. The 2008 inspection field team may elect to photo-document specific conditions or changes to the parcel, especially if visible vermiculite is found during the inspection. All new photographs will be recorded on the field forms, downloaded and saved into the Troy parcel electronic file. All inspection field forms will also be scanned and saved into the Troy parcel electronic file. Tetra Tech will manage the 2008 inspection data and any changes to the 2007 inspection data for visible vermiculite and sampling according to the approved TAPE Data Management Plan.

DEQ COST OR PRICE SUMMARY

Form Approved: 7-22-92

PART I - GENERAL

1. PROJECT **Troy TAPE Project Work**	2. DEQ Contract No. 402014
3. NAME OF CONTRACTOR OR SUBCONTRACTOR Tetra Tech EM Inc.	4. PROPOSAL DATE 12/8/2006
5. ADDRESS OF CONTRACTOR OR SUBCONTRACTOR (Include ZIP Code) Tetra Tech EM Inc. 7 West 6th Avenue Power Block Bldg, Suite 612 Helena, MT 59601 TELEPHONE NUMBER (Include Area Code) (406) 442-5588	6. TYPE OF SERVICE TO BE FURNISHED **Troy Bridging Tasks (b/t WP and TAPE field work)** - 4 days PDA Training in Denver - 2 trips to Troy to assist with Troy office opening - Pre-TAPE tasks to set up Troy office and familiarize new Community Relations person about project.

PART II - COST SUMMARY

7. DIRECT LABOR (Specify labor categories)	ESTIMATED HOURS	HOURLY RATE	ESTIMATED COST	TOTALS
Jessica Allewalt - P1 (Environmental Scientist)	60	$20.00	$1,200.00	
Brian Antonioli - P3 (Project Engineer/Project Manager)	100	$36.84	$3,684.00	
Shane Broesder - P2 (Chemical Engineer)	0	$24.85	$0.00	
Aaron Cade - P2 (Data Management)	20	$34.00	$680.00	
Alane Dallas - CL (Word processing/photocopy)	20	$19.65	$393.00	
Dave Donohue - P3 (Hydrogeologist/QCC)	0	$34.30	$0.00	
Randy Dorian - P4 (IT Management VI/Database)	40	$53.52	$2,140.80	
Bryan Erickson - P1 (Environmental Scientisti/Asbestos)	0	$21.24	$0.00	
Doug Herold - P1 (Computer Graphics Specialist)	0	$20.00	$0.00	
Sandra Hertweck - CL (Financial/Administrative Assistant)	20	$18.00	$360.00	
Allison Jenkins - P3 (Toxicologist-Human Health)	0	$34.26	$0.00	
Ed Madej - P2 (GIS Specialist)	0	$26.95	$0.00	
Geoff Ninefeldt - P2 (Technician/TAPE Inspector)	60	$22.00	$1,320.00	
Kathie Roos - P3 (Chemical Engineer)	0	$24.18	$0.00	
Gregory Sharp - P4 (CHMM/Asbestos Inspector)	0	$45.00	$0.00	
Alicia Stickney - P2 (Geologist/Technical Editor)	0	$18.54	$0.00	
Mark Stiffler - P2 (Environmental Scientist)	0	$25.90	$0.00	
Mark Stockwell - P4 (Industrial Safety Specialist-Asbestos)	100	$41.94	$4,194.00	
J. Edward Surbrugg - P4 (Soil Scientist/QCC)	100	$50.89	$5,089.00	
Rachel Treanor - P1 (Environmental Scientist/Asbestos)	40	$19.68	$787.20	
Community Relations Employee - P1 (Community Relations)	80	$16.00	$1,280.00	
DIRECT LABOR TOTAL:	640			$19,848.00

8. INDIRECT COSTS (Specify indirect cost pools)		x BASE =	ESTIMATED COST	
Fringe Overhead	41.20%	19,848.00	$8,177.38	
General Overhead (Core, Non-Off-Site, G&A)	90.10%	19,848.00	$17,883.05	
INDIRECT COSTS TOTAL:				$26,060.43

9. OTHER DIRECT COSTS				
a. TRAVEL	UNITS	COST PER UNIT	ESTIMATED COST	
(1) Transportation (see Travel backup for detail)	Actual	See backup	$5,110.00	
(2) Perdiem (see Travel backup for detail)	Actual	See backup	$1,991.00	
(3) Lodging (see Travel backup for detail)	Actual	See backup	$4,433.60	
TRAVEL SUBTOTAL:			$11,534.60	
b. EQUIPMENT, MATERIALS, SUPPLIES (Specify categories)	UNITS	COST PER UNIT	ESTIMATED COST	
Computer (hours)	160	$5.48	$876.80	
Photocopies (pages)	250	$0.14	$35.00	
Telephone	15	$5.00	$75.00	
Postage/Federal Express	8	$10.00	$80.00	
EQUIPMENT, MATERIALS, SUPPLIES SUBTOTAL:			$1,066.80	
c. SUBCONTRACTS (Specify Categories)			ESTIMATED COST	
Keith Crons (Tetra Tech MM-Great Falls) for PDA trainig	40	$80.00	$3,200.00	
			$0.00	
SUBCONTRACT SUBTOTAL:			$3,200.00	
d. OTHER (Specify Categories)				
			$0.00	
OTHER SUBTOTAL			$0.00	
OTHER DIRECT COSTS TOTAL:				$15,801.40
10. TOTAL ESTIMATED COST				$61,709.83
11. PROFIT				$4,592.60
12. TOTAL PRICE				$66,302.43

DEQ COST OR PRICE SUMMARY

Form Approved: 7-22-92

PART I - GENERAL

1. PROJECT **Troy - TAPE Field Work**	2. DEQ Contract No. 402014
3. NAME OF CONTRACTOR OR SUBCONTRACTOR Tetra Tech EM Inc.	4. PROPOSAL DATE 12/8/2006
5. ADDRESS OF CONTRACTOR OR SUBCONTRACTOR (Include ZIP Code) Tetra Tech EM Inc. 7 West 6th Avenue Power Block Bldg, Suite 612 Helena, MT 59601 TELEPHONE NUMBER (Include Area Code) (406) 442-5588	6. TYPE OF SERVICE TO BE FURNISHED **TAPE Field Work Project** - 19-month project period (3/07 thru 9/08) - Pre-field Activities (6 weeks - 2007; 4 weeks -2008) - Field Activities (20 weeks - 2007; 10 weeks 2008) approximately 1,000 properties in Troy, MT - Post-field Activities (6 weeks - 2007; 6 weeks - 2008) and final Field Summary Reports

PART II - COST SUMMARY

7. DIRECT LABOR (Specify labor categories)	ESTIMATED HOURS	HR RATE FY 07	HR RATE FY 08	TOTALS (61% 07 + 39% 08)
Jessica Allewalt - P1 (Env. Scientist/Sample Coord)	1,528	$20.00	$20.80	$31,036.74
Brian Antonioli - P3 (Project Engineer)	344	$36.84	$38.31	$12,870.66
Aaron Cade - P2 (IT Specialist/Database Management)	56	$34.00	$35.36	$1,933.70
Alane Dallas - CL (Word processing/photocopy)	188	$19.65	$20.44	$3,751.83
Randy Dorian - P4 (IT Management VI/Database)	380	$53.52	$55.66	$20,654.87
Doug Herold - P1 (Computer Graphics Specialist)	368	$20.00	$20.80	$7,474.82
Sandra Hertweck - CL (Financial/Administrative Assistant)	238	$18.00	$18.72	$4,350.83
Ed Madej - P2 (GIS Specialist)	616	$26.95	$28.03	$16,860.18
Rindy Mortensen - P2 (Procurement Specialist)	60	$24.63	$25.62	$1,500.85
Kathie Roos - P3 (Chemical Engineer)	384	$24.18	$25.15	$9,429.97
Alicia Stickney - P2 (Geologist/Technical Editor)	184	$18.54	$19.28	$3,464.58
Mark Stockwell - P4 (TAPE Field Manager)	2,468	$41.94	$43.62	$105,122.64
J. Edward Surbrugg - P4 (TAPE Project Manager)	1,064	$50.89	$52.93	$54,991.65
Tt-Helena - P2 (Chemist/Sample Coord)	1,444	$29.00	$30.16	$42,529.27
Community Relations Employee - P1 (Community Relations)	2,440	$16.00	$16.64	$39,649.02
Matt Bartkiewicz - P1 (TAPE Inspector #1)	1,474	$16.25	$16.90	$24,326.16
Geoff Ninefeldt - P1 (TAPE Inspector #2)	1,210	$22.00	$22.88	$27,035.27
Employee A - P2 (TAPE Inspector #3)	1,246	$25.00	$26.00	$31,635.94
Employee B - P1 (TAPE Inspector #4)	1,130	$20.00	$20.80	$22,952.56
Employee C - P1 (TAPE Inspector #5)	1,130	$20.00	$20.80	$22,952.56
Bryan Erickson - P1 (TAPE Inspector #6)	1,280	$21.24	$22.09	$27,607.16
Rachel Treanor - P1 (TAPE Inspector #7)	1,200	$19.68	$20.46	$23,980.51
Employee D - P1 (TAPE Inspector #8)	1,200	$20.00	$20.80	$24,374.40
Employee E - P1 (TAPE Inspector #9)	1,200	$20.00	$20.80	$24,374.40
Employee F - P1 (TAPE Inspector #10)	1,200	$20.00	$20.80	$24,374.40
DIRECT LABOR TOTAL:	24,032			$609,234.96

8. INDIRECT COSTS (Specify indirect cost pools)		x BASE =	ESTIMATED COST	
Fringe Overhead	41.20%	609,234.96	$251,004.80	
General Overhead (Core, Non-Off-Site, G&A)	90.10%	609,234.96	$548,920.70	
INDIRECT COSTS TOTAL:				$799,925.50

9. OTHER DIRECT COSTS				
a. TRAVEL	UNITS	COST PER UNIT	ESTIMATED COST	
(1) Rental vehicles (see detail)	165	$525.45	$85,800.00	
(2) Perdiem (see detail)	2738	$23.00	$62,974.00	
(3) Lodging (see detail)	-	-	$196,195.20	
(4) Personal car mileage (see detail)	16000	$0.45	$7,120.00	
(5) Gasoline (see detail)	9007	$3.00	$27,020.00	
(6) Airline trips (see detail)	42	$700.00	$29,400.00	
TRAVEL SUBTOTAL:			$408,509.20	
b. EQUIPMENT, MATERIALS, SUPPLIES (Specify categories)	UNITS	COST PER UNIT	ESTIMATED COST	
Computer (hours)	3,350	$5.48	$18,358.00	
Photocopies (pages)	17,500	$0.17	$2,975.00	
Telephone (cell phone, office phone, fax)	1,124	$5.00	$5,620.00	
Postage/Federal Express	135	$35.19	$ 4,750.00	
Equipment, supplies, office (see detail)			$124,654.50	
EQUIPMENT, MATERIALS, SUPPLIES SUBTOTAL:			$156,357.50	
c. SUBCONTRACTS (Specify Categories)			ESTIMATED COST	
Tetra Tech-(formerly-Maxim) TAPE Inspectors (see detail)	11,110	$66.75	$741,619.77	
			$0.00	
SUBCONTRACT SUBTOTAL:			$741,619.77	
d. OTHER (Specify Categories)				
			$0.00	
OTHER SUBTOTAL			$0.00	
OTHER DIRECT COSTS TOTAL:				$1,306,486.47

10. TOTAL ESTIMATED COST	$2,715,646.93
11. PROFIT	$166,464.40
12. TOTAL PRICE	$2,882,111.33

DEQ COST OR PRICE SUMMARY

Form Approved: 7-22-92

PART I - GENERAL

1. PROJECT **Troy - PDI Field Work (FY 08)**	2. DEQ Contract No. 402014
3. NAME OF CONTRACTOR OR SUBCONTRACTOR Tetra Tech EM Inc.	4. PROPOSAL DATE 12/8/2006
5. ADDRESS OF CONTRACTOR OR SUBCONTRACTOR (Include ZIP Code) Tetra Tech EM Inc. 7 West 6th Avenue Power Block Bldg, Suite 612 Helena, MT 59601	6. TYPE OF SERVICE TO BE FURNISHED **PDI Field Work Project** - 3-month project period (7/08 thru 9/08) - Pre-field Activities (4 weeks - 2008) - Field Activities (13 weeks - 2008) No post Sept 08 activities included in this estimate
TELEPHONE NUMBER (Include Area Code) (406) 442-5588	

PART II - COST SUMMARY

7. DIRECT LABOR (Specify labor categories)	ESTIMATED HOURS	HR RATE FY 07	HR RATE FY 08	TOTALS (0% 07 + 100% 08)
Jessica Allewalt - P1 (Env. Scientist/PDI Inspector)	660	$20.00	$20.80	$13,728.00
Brian Antonioli - P3 (Project Engineer)	120	$36.84	$38.31	$4,597.63
Aaron Cade - P2 (IT Specialist/Database Management)	0	$34.00	$35.36	$0.00
Alane Dallas - CL (Word processing/photocopy)	0	$19.65	$20.44	$0.00
Randy Dorian - P4 (IT Management VI/Database)	180	$53.52	$55.66	$10,018.94
Doug Herold - P1 (Computer Graphics Specialist)	80	$20.00	$20.80	$1,664.00
Sandra Hertweck - CL (Financial/Administrative Assistant)	0	$18.00	$18.72	$0.00
Ed Madej - P2 (GIS Specialist)	200	$26.95	$28.03	$5,605.60
Rindy Mortensen - P2 (Procurement Specialist)	0	$24.63	$25.62	$0.00
Kathie Roos - P3 (Chemical Engineer)	160	$24.18	$25.15	$4,023.55
Alicia Stickney - P2 (Geologist/Technical Editor)	80	$18.54	$19.28	$1,542.53
Mark Stockwell - P4 (PDI Field Manager)	800	$41.94	$43.62	$34,894.08
J. Edward Surbrugg - P4 (PDI Project Manager)	344	$50.89	$52.93	$18,206.41
Tt Helena - P2 (Chemist/Sample Coord)	660	$29.00	$30.16	$19,905.60
Community Relations Employee - P1 (Community Relations)	260	$16.00	$16.64	$4,326.40
Matt Bartkiewicz - P1 (PDI Inspector #1)	460	$16.25	$16.90	$7,774.00
Geoff Ninefeldt - P1 (PDI Inspector #2)	460	$25.00	$26.00	$11,960.00
Employee A - P2 (PDI Inspector #3)	500	$25.00	$26.00	$13,000.00
Employee B - P1 (PDI Inspector #4)	460	$25.00	$26.00	$11,960.00
Employee C - P1 (PDI Inspector #5)	460	$25.00	$26.00	$11,960.00
Bryan Erickson - P1 (PDI Inspector #6)	500	$21.24	$22.09	$11,043.14
Rachel Treanor - P1 (PDI Inspector #7)	460	$19.68	$20.46	$9,413.38
Employee D - P1 (PDI Inspector #8)	460	$25.00	$26.00	$11,960.00
Employee E - P1 (PDI Inspector #9)	460	$25.00	$26.00	$11,960.00
Employee F - P1 (PDI Inspector #10)	460	$20.00	$20.80	$9,568.00
DIRECT LABOR TOTAL:	8,224			$229,111.26

8. INDIRECT COSTS (Specify indirect cost pools)		x BASE =	ESTIMATED COST	
Fringe Overhead	41.20%	229,111.26	$94,393.84	
General Overhead (Core, Non-Off-Site, G&A)	90.10%	229,111.26	$206,429.25	
INDIRECT COSTS TOTAL:				$300,823.09

9. OTHER DIRECT COSTS				
a. TRAVEL	UNITS	COST PER UNIT	ESTIMATED COST	
(1) Rental vehicles (see detail)	27	$1,000.00	$33,375.00	
(2) Perdiem (see detail)	1067	$23.00	$24,541.00	
(3) Lodging (see detail)	-	-	$77,874.60	
(4) Personal car mileage (see detail)	6000	$0.45	$2,670.00	
(5) Gasoline (see detail)	3380	$3.00	$10,140.00	
(6) Airline trips (see detail)	16	$700.00	$11,200.00	
TRAVEL SUBTOTAL:			$159,800.60	
b. EQUIPMENT, MATERIALS, SUPPLIES (Specify categories)	UNITS	COST PER UNIT	ESTIMATED COST	
Computer (hours)	780	$5.48	$4,274.40	
Photocopies (pages)	3,500	$0.14	$490.00	
Telephone (cell phone, office phone, fax)	410	$5.00	$2,050.00	
Postage/Federal Express	35	$50.00	$ 1,750.00	
Equipment, supplies, office (in TAPE cost estimate)			$0.00	
EQUIPMENT, MATERIALS, SUPPLIES SUBTOTAL:			$8,564.40	
c. SUBCONTRACTS (Specify Categories)			ESTIMATED COST	
Tetra Tech-(DBA-Maxim) PDI Inspectors (see detail)	4,680	$68.89	$322,386.01	
			$0.00	
SUBCONTRACT SUBTOTAL:			$322,386.01	
d. OTHER (Specify Categories)				
			$0.00	
OTHER SUBTOTAL			$0.00	
OTHER DIRECT COSTS TOTAL:				$490,751.01

10. TOTAL ESTIMATED COST	$1,020,685.36
11. PROFIT	$63,551.34
12. TOTAL PRICE	$1,084,236.70

U.S. ENVIRONMENTAL PROTECTION AGENCY

Assistance Amendment

ASSISTANCE ID NO.			DATE OF AWARD
PRG	DOC ID	AMEND#	07/12/2007
V -	97801901	- 5	
TYPE OF ACTION: Augmentation: Increase			MAILING DATE: 07/19/2007
PAYMENT METHOD: ASAP			ACH#: 80013

RECIPIENT TYPE:
State

Send Payment Request to:
Las Vegas Finance Center - LVFC

RECIPIENT:
MT Department of Environmental Quality
P. O. Box 200901
Helena, MT 59620-0901
EIN: 81-0302402

PAYEE:
MT Department of Environmental Quality
P. O. Box 200901
Helena, MT 59620-0901

PROJECT MANAGER	EPA PROJECT OFFICER	EPA GRANT SPECIALIST
Vic Andersen P. O. Box 200901 Helena, MT 59620-0901 **E-Mail:** vandersen@mt.gov **Phone:** 406-841-5025	Roger Hoogerheide 10 West 15th Street, Suite 3200, 8MO Helena, MT 59626 **E-Mail:** hoogerheide.roger@epa.gov **Phone:** 406-457-5031	Danette Quick Montana Office, 8MO **E-Mail:** quick.danette@epa.gov **Phone:** 406-457-5010

PROJECT TITLE AND EXPLANATION OF CHANGES
Troy Superfund Cooperative Agreement
This Amendment increases the Assistance Agreement by $200,000.

BUDGET PERIOD	PROJECT PERIOD	TOTAL BUDGET PERIOD COST	TOTAL PROJECT PERIOD COST
10/01/2004 - 09/30/2008	10/01/2004 - 09/30/2008	$2,447,000.00	$2,447,000.00

NOTICE OF AWARD

Based on your application dated 02/21/2007, including all modifications and amendments, the United States acting by and through the US Environmental Protection Agency (EPA), hereby awards $200,000. EPA agrees to cost-share 100.00% of all approved budget period costs incurred, up to and not exceeding total federal funding of $2,447,000. Such award may be terminated by EPA without further cause if the recipient fails to provide timely affirmation of the award by signing under the Affirmation of Award section and returning all pages of this agreement to the Grants Management Office listed below within 21 days after receipt, or any extension of time, as may be granted by EPA. This agreement is subject to applicable EPA statutory provisions. The applicable regulatory provisions are 40 CFR Chapter 1, Subchapter B, and all terms and conditions of this agreement and any attachments.

ISSUING OFFICE (GRANTS MANAGEMENT OFFICE)	AWARD APPROVAL OFFICE
ORGANIZATION / ADDRESS	**ORGANIZATION / ADDRESS**
Environmental Protection Agency, Region 8 1595 Wynkoop Street Denver, CO 80202-1129	U.S. EPA, Region 8 Montana Office 10 West 15th Street, Suite 3200 Helena, MT 59626

THE UNITED STATES OF AMERICA BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY

SIGNATURE OF AWARD OFFICIAL	TYPED NAME AND TITLE	DATE
Digital signature applied by EPA Award Official	Wayne Anthofer, Director, Grants, Audit and Procurement Program Office	07/12/2007

AFFIRMATION OF AWARD

BY AND ON BEHALF OF THE DESIGNATED RECIPIENT ORGANIZATION

SIGNATURE	TYPED NAME AND TITLE	DATE
	Richard H. Opper, Director	

EPA Funding Information

FUNDS	FORMER AWARD	THIS ACTION	AMENDED TOTAL
EPA Amount This Action	$ 2,247,000	$ 200,000	$ 2,447,000
EPA In-Kind Amount	$ 0	$ 0	$ 0
Unexpended Prior Year Balance	$ 0	$ 0	$ 0
Other Federal Funds	$ 0	$ 0	$ 0
Recipient Contribution	$ 0	$ 0	$ 0
State Contribution	$ 0	$ 0	$ 0
Local Contribution	$ 0	$ 0	$ 0
Other Contribution	$ 0	$ 0	$ 0
Allowable Project Cost	$ 2,247,000	$ 200,000	$ 2,447,000

Assistance Program (CFDA)	Statutory Authority	Regulatory Authority
66.802 - Superfund State Political Subdivision and Indian Tribe Site Specific Cooperative Agreements	CERCLA: Sec. 104(d)(1)	40 CFR PTS 31 & 35 SUBPT O

Fiscal

Site Name	Req No	FY	Approp. Code	Budget Organization	PRC	Object Class	Site/Project	Cost Organization	Obligation / Deobligation
TROY	078ALPV177	07	T	8AL0P	302DD2E	4185	08BCCO07	C003	200,000
									200,000

Budget Summary Page

Table A - Object Class Category (Non-construction)	Total Approved Allowable Budget Period Cost
1. Personnel	$69,611
2. Fringe Benefits	$21,130
3. Travel	$23,790
4. Equipment	$6,059
5. Supplies	$11,602
6. Contractual	$2,283,241
7. Construction	$0
8. Other	$10,708
9. Total Direct Charges	$2,426,141
10. Indirect Costs: % Base	$20,859
11. Total (Share: Recipient % Federal 100.00 %.)	$2,447,000
12. Total Approved Assistance Amount	$2,447,000
13. Program Income	$0
14. Total EPA Amount Awarded This Action	$200,000
15. Total EPA Amount Awarded To Date	$2,447,000

Former Award

Table A - Object Class Category (Non-construction)	Total Approved Allowable Budget Period Cost
1. Personnel	$69,611
2. Fringe Benefits	$21,130
3. Travel	$23,790
4. Equipment	$6,059
5. Supplies	$11,602
6. Contractual	$2,083,241
7. Construction	$0
8. Other	$10,708
9. Total Direct Charges	$2,226,141
10. Indirect Costs	$20,859
11. Total (Share: Recipient % Federal %.)	$2,247,000
12. Total Approved Assistance Amount	$2,247,000
13. Program Income	$0

This Action

Table A - Object Class Category (Non-construction)	Total Approved Allowable Budget Period Cost
1. Personnel	$0
2. Fringe Benefits	$0
3. Travel	$0
4. Equipment	$0
5. Supplies	$0
6. Contractual	$200,000
7. Construction	$0
8. Other	$0
9. Total Direct Charges	$200,000
10. Indirect Costs	$0
11. Total (Share: Recipient % Federal %.)	$200,000
12. Total Approved Assistance Amount	$200,000
13. Program Income	$0

Administrative Conditions

The following Administrative Condition is being added:

a. The recipient agrees to:
   (1) Establish all subaward agreements in writing;
   (2) Maintain primary responsibility for ensuring successful completion of the EPA -approved project (this responsibility cannot be delegated or transferred to a subrecipient);
   (3) Ensure that any subawards comply with the standards in Section 210(a)-(d) of OMB Circular A-133 and are not used to acquire commercial goods or services for the recipient;
   (4) Ensure that any subawards are awarded to eligible subrecipients and that proposed subaward costs are necessary, reasonable, and allocable;
   (5) Ensure that any subawards to 501(c)(4) organizations do not involve lobbying activities;
   (6) Monitor the performance of their recipients and ensure that they comply with all applicable regulations, statutes, and terms and conditions which flow down in the subaward;
   (7) Obtain EPA's consent before making a subaward to a foreign or international organization, or a subaward to be performed in a foreign country; and
   (8) Obtain approval from EPA for any new subaward work that is not outlined in the approved work plan in accordance with 40 CFR Parts 30.25 and 31.30, as applicable.

b. Any questions about subrecipient eligibility or other issues pertaining to subawards should be addressed to the recipient's EPA Project Officer. Additional information regarding subawards may be found at http://www.epa.gov/ogd/guide/subaward-policy-part-2.pdf. Guidance for distinguishing between vendor and subrecipient relationships and ensuring compliance with Section 210(a)-(d) of OMB Circular A-133 can be found at http://www.epa.gov/ogd/guide/subawards-appendix-b.pdf and http://www.whitehouse.gov/omb/circulars/a133/a133.html.

c. The recipient is responsible for selecting its subrecipients and, if applicable, for conducting subaward competitions.

Programmatic Conditions

All Programmatic Conditions Remain the Same

P1)

Sign-In 4/27/07 Attendance

Name	Signature
Katy Norris	
Mark Stockwell	
Ed Surbrugg	
Jared Shaw	
Max Underwood	
Spencer Smith	
Sherry Weedman	
Nathan Shumate	
Chris Reynolds	
Randy Laskowski	
Scott Vosen	
Rose Russell	
Chris Nurgel	
Katie Schultz	
Dan Shaffer	
Kevin Kobel	
Mike Davis	
Bryan Erickson	
John Ruth	
Shane Ewert	
Matthew Bartkiewicz	
Charles Mortensen	
Josh Johnson	
James W. Lyons	
Mike DeMille	
Jennifer Casey	
Jessica Allewalt	

2) 4/27 Sign In

NAME	Signature
Virgil Kaiser	Virgil Ka
Keith Cron	
DAN BLYTHE	
MCK SMH	
Randy Dorian	
DEBBIE GOELDNER	Deborah Goeldner
ANGELA BOLTON	Angela Bolton
Frank McGuire	Frank McGuire
Joe Schaefer	
Brian Brass	
Rebecca Connell	
Melissa Bryant	Melissa Bryant
Courtney Zamora	
Nick Raines (CDM)	
THOMAS E. Cook CDM	
ED MADEJ	Ed Madej

TAPE Training Attendance Sheet
Senior Center, Troy Montana

Date: **Monday, April 23, 2007**

	NAME	SIGNATURE
1.	J. Edward Surbrugg	
2.	Charles Mortensen	
3.	SHANE EWERT	
4.	Jared Shaw	
5.	Rose Russell	
6.	IAN BLYTHE	
7.	MAX UNDERWOOD	
8.	KATHARINE SCHULTZ	
9.	JAMES W. LYONS	
10.	Chris Reynolds	
11.	Day Shaffer	
12.	Kevin Kobel	
13.	Virgil Kaiser	
14.	Randy Laskowski	
15.	John Ruth	
16.	Matthew Barthiaux	
17.	Jessica Allewalt	
18.	Keith Cion	
19.	Nathan Shumate	
20.	Scott Vosen	
21.	ANGELA BOLTON	
22.	Mike DeMille	
23.	SHERRY WEEDMAN	
24.	MICHAEL T. SMITH	
25.	Jennifer Casey	

TAPE Training Attendance Sheet
Senior Center, Troy Montana
(Page 2)

Date: **Monday, April 23, 2007**

	NAME	SIGNATURE
26.	Bryan Erickson	
27.	Stephen Spencer Smith	
28.	JOSH JOHNSON	
29.	MIKE DAVIS	
30.	Chris Mengel	
31.	Thomas E. Cook, CDM	
32.	Courtney Zampa, Volpe	
33.	Ted Linnert	
34.	Mike Ciriani	
35.	Martin McComb	
36.	CATHERINE LECOURS	
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TAPE Training Attendance Sheet
Senior Center, Troy Montana

Date: **Tuesday, April 24, 2007**

	NAME	SIGNATURE
1.	Virgil Kaiser	
2.	Randy Laskowski	
3.	John Ruth	
4.	Dan Shalk	
5.	Kevin Kobel	
6.	JAMES W. LYONS	
7.	CHARLES MORIENSEN	
8.	Jessica Allewalt	
9.	Matthew E. Barthiewicz	
10.	KATHARINE SCHULTZ	
11.	MAX UNDERWOOD	
12.	Rose Russell	
13.	DAN BLITHE	
14.	Jared Shaw	
15.	SHANE EWERT	
16.	Nathan Shumate	
17.	Keith Cron	
18.	NICK SHIM	
19.	SHERRY WEEDMAN	
20.	Mike DeMille	
21.	Scott Vosen	
22.	Jennifer Casey	
23.	MIKE DAVIS	
24.	Chris Murgel	
25.	Bryan Erickson	

TAPE Training Attendance Sheet
Senior Center, Troy Montana
(Page 2)

Date: **Tuesday, April 24, 2007**

	NAME	SIGNATURE
26.	Spencer Smith	
27.	* Katy Nan Norris	Katy Norris
28.	MARK STOCKWELL	
29.	J. Edward Surbrugg	J. Edward Surbrugg
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TAPE Training Attendance Sheet
Senior Center, Troy Montana

Date: **Wednesday, April 25, 2007**

	NAME	SIGNATURE
1.	CATHERINE LECOURS	
2.	Virgil Kaiser	
3.	Kevin Kobel	
4.	Randy Laskowski	
5.	John Ruth	
6.	Dan Shaffer	
7.	Chris Reynolds	
8.	JAMES W. LYONS	
9.	CHARLES MORRISON	
10.	Jessica Allewalt	
11.	Matthew E. Bartkiewicz	
12.	KATHARINE SCHULTZ	
13.	MAX UNDERWOOD	
14.	Rose Russell	
15.	DAN BLYTHE	
16.	Jared Shaw	
17.	SHANE EWERT	
18.	NATHAN Shumate	
19.	ANGELA BOLTON	
20.	Mike DeMille	
21.	SHERRY WEEDMAN	
22.	MIKE SMITH	
23.	Jennifer Casey	
24.	Chris Murgel	
25.	MIKE DAVIS	

TAPE Training Attendance Sheet
Senior Center, Troy Montana
(Page 2)

Date: **Wednesday, April 25, 2007**

	NAME	SIGNATURE
26.	Josh Johnson	
27.	Spencer Smith	
28.	Bryan Erickson	
29.	Scott Vosen	
30.	Keith Cron	
31.	Katy Norris	
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TETRA TECH, INC.

DAILY TAILGATE SAFETY MEETING FORM (Continued)

Attendees	
Printed Name	**Signature**
Chris Margel	
MIKE DAVIS	
Jennifer Casey	
Keith Cox	
NICK SMITH	
SHERRY WEEDMAN	
Mike Demille	
Scott Vosen	
Nathan Shumate	
Rose Russell	
MAX UNDERWOOD	
Katie Schultz	
SHANE EWERT	
Kevin Kekel	
CHARLES MORTENSEN	
JAMES W. LYONS	
Matthew E. Bartkiewicz	
Virgil Kaiser	
Jessica Allewalt	
DANIEL BLYTHE	
J. Edward Surbrugg	

Meeting Conducted by:

MARK STOCKWELL
Name

FIELD TEAM MANAGER
Title

Signature

4/26/07

Discussion Points for Catherine to look into:

Catherine will look into another way to inform residents of doing split samples in the access agreement or some other source rather than having inspectors discuss it.

Dust sampling right now is prioritizing floors, which means we may not get to windows and other important source areas-Catherine will discuss this with the EPA.

In dust sampling protocol, we will use letters rather than numbers for sampling area ids-let EPA know this.

Review overloading dust cassettes SOP-we need to know how much strain there is on the battery and issues with rapid overloading.

Phone call with Mary Goldade on 4/26 approved following changes: 1) Delete interior space from parcel drop down 2) Delete no of levels of floors and rooms in Primary Bld. drop down 3) Delete location of outdoor vermiculite.

Other PDA additions will be added by Randy Dorian like spell out blanks, edit filter size

Confirm that we will only do horizontal and vertical pass on dust sampling to total 30 seconds.

Check on EPA fact sheet completion-get HEPA fact sheet from Ted Linnert

Have Marty make sample labels with less specific details-

Other Actions:

-Put together talking points for Michele for scheduling such as need more building info-use words such as "safer", ask for attic access details, how many out buildings etc.
-Put together a canned cheat sheet for inspector interviews
-Get tetanus shot updates and schedule shots
-set up grocery store account for Michelle
-make more templates for window sills
-have additional "action" log book for internal use such for things like a follow up reminder for Catherine to contact owner as requested

ATTACHMENT D
ASBESTOS PROFILE

1.0 MINERALOGY

Asbestos is the generic name for the fibrous habit of a broad family of naturally occurring poly-silicate minerals. Based on crystal structure, asbestos minerals are usually divided into two classes: serpentine and amphibole.

Serpentine. The general chemical composition of serpentine is $Mg_3Si_2O_5(OH)_4$. However, the exact composition in any particular sample may vary somewhat from the general composition. For example, aluminum may occasionally replace silicon, and iron, nickel, manganese, zinc, or cobalt may occasionally replace magnesium in the crystal lattice. The only asbestos member of the serpentine class is chrysotile. Chrysotile is the most widely used form of asbestos, accounting for about 90% of the asbestos used in commercial products such as insulation, friction products, floor tiles, cement building materials, textiles, etc. (IARC, 1977).

Amphiboles. Amphiboles occur as extended chains of silicate tetrahedra interconnected by bands of cations. The general chemical composition of amphiboles is $A_{0\text{-}1}B_2C_5T_8O_{22}(OH,F,Cl,O)_2$, where the most common cations are:

A = Na, K
B = Na, Ca
C = Mg, Fe, Mn, Ti, Al.
T = Si, Al, Ti.

Some of these elements may also be partially substituted by Cr, Li, Pb, Zn or other cations. Types of amphibole asbestiforms include actinolite, cummingtonite-gruenerite (amosite), anthophyllite, rebeckite (crocidolite), tremolite, winchite, richterite, and fluro-edenite.

The Libby vermiculite deposit contains amphiboles of several compositions including winchite, richterite, tremolite, and possibly magnesioriebeckite that form intergrowths with the vermiculite and gangue rocks (Meeker et al., 2003). The morphology of Libby amphibole particles ranges from prismatic crystals to asbestiform fibers (USGS, 2005), and most individual particles display features intermediate between cleavage fragments and long flexible fibers (Meeker et al. 2003). Figure 1 provides a scanning electron microscope view of some LA fibers.

2.0 ANALYTICAL METHODS

Analytical methods that are available for detecting and measuring asbestos in environmental media are summarized in Table 1. The methods are described in greater detail in the following subsections.

Light Microscopy

Phase Contrast Microscopy (PCM)

Phase contrast microscopy (PCM) is an analytical method used mainly for measuring asbestos in air. A known volume of air is drawn through a filter and asbestos fibers in the air are deposited on the filter. A portion of the filter is then prepared for examination under a phase contras microscope. In this type of microscopy, light that passes through a particle such as an asbestos fiber becomes delayed ("out of phase") compared to light passing next to the particle. This difference in phase between light passing through a particle and near a particle is used to increase the contrast (visibility) of the particle, which allows visualization of structures that otherwise would be very difficult to observe under ordinary light microscopy. The limit of resolution of PCM is about 0.25 um, so particles thinner than this are generally not observable.

A key limitation of PCM is that particle discrimination is based only on size and shape. Because of this, it is not possible to classify asbestos particles by mineral type, or even to distinguish between asbestos and non-asbestos particles. Consequently, structures that are counted by PCM may include a variety of naturally occurring non-asbestos minerals that may occur in the form of long thin structures, as well as non-mineral particles such as animal hair and synthetic fibers. This tends to overestimate the true concentration of asbestos, especially in non-industrial settings. Conversely, PCM may also tend to underestimate the true asbestos content of a sample since particles that are thinner than 0.25 um are generally too thin to be observed.

One common method for the application of PCM to the analysis of asbestos in air is NIOSH Method 7400 (NIOSH 1994a). This method provides a full description of how samples should be collected, prepared and examined. Under NIOSH 7400, a structure is defined as any particle more than 5 um in length with as aspect ratio $\geq$ 3:1. In general, complex particles (bundles, clusters) are counted as single particles, unless the individual components can be clearly identified (by observing both ends of each individual fiber). Results are generally reported in units of PCM structures per cubic centimeter (f/cc) of air.

Polarized Light Microscopy (PLM)

Polarized light microscopy (PLM) is an analytical method used mainly for examining asbestos particles in soil and sediment material. In this type of microscopy, light is transmitted through

the sample and then filtered with a polarizing lens in order to visualize its components. This method allows for qualitative identification of asbestos particles and semi-quantitative determination of asbestos content in bulk samples. The limit of detection for this method is < 1% asbestos. Results are generally reported as area fraction or mass fraction.

There are three common methods for the application of PLM to the analysis of asbestos in soil/sediment, PLM visual area estimation (PLM-VE), PLM gravimetric (PLM-GRAV), and PLM point counting (PLM-PC).

PLM-VE is a semi-quantitative method for identifying and quantifying asbestos fibers in soil. This method requires the microscopist to estimate the area fraction (AF%) of the total material present in a field of view that consists of asbestos material. This method is based on NIOSH Method 9002 (NIOSH 1994b), EPA Method 600/R-93/116 (USEPA 1993), and CARB Method 435 (CARB 1991), with project-specific modifications intended specifically for use at the Libby Superfund Site as detailed in SRC-LIBBY-03. At Libby, soil samples are ground prior to analysis, results for Libby amphibole (LA) are reported as mass fraction based on site-specific calibration standards, and LA concentrations less than 1% are stratified into 3 classification bins – non-detect, trace (<0.2%), and <1%.

PLM-GRAV is a semi-quantitative method for identifying and quantifying asbestos fibers in coarse soil fractions (particles that are retained on a ¼" sieve). This method requires the microscopist to first identify and segregate suspected asbestos particles using stereomicroscopy. The tentatively identified asbestos particles will be examined by PLM (as described above) and the total weight of each type of positively identified asbestos will be determined gravimetrically. This method is based on NIOSH Method 9002 (NIOSH 1994b) and SRC-LIBBY-01. At Libby, particles smaller than 2-3 mm are not large enough to weigh so the results are reported semi-quantitatively into 2 classification bins – non-detect and trace.

PLM-PC is a quantitative method that involves counting the total number of particles (asbestos vs. non-asbestos) (generally 400 or 1,000) lying on superimposed points in the microscope field created by an ocular reticule (point array) or cross-hair. In order for a particle to be counted as asbestos, the aspect ratio must be ≥ 3:1. This method is based on EPA/600/R-93/116 (USEPA 1993) and CARB Method 435 (CARB 1991), with project-specific modifications intended specifically for use at the Libby Superfund Site as detailed in SRC-LIBBY-03. At Libby, point-count estimates of area fraction for LA particles will be converted into estimates of mass fraction using a standard curve prepared using a series of site-specific reference materials containing 0%, 0.2%, 0.5%, 1%, or 2% LA.

Electron Microscopy

Transmission Electron Microscopy (TEM)

Transmission electron microscopy (TEM) is used mainly to evaluate samples of water, air, or dust that have been collected on a filter. This method utilizes a high energy electron beam rather than a beam of light to irradiate the sample. TEM can be used to analyze asbestos in all types of environmental samples (air, water, soil, sediment) and in biological samples (tissue). Instead of glass lenses focusing the light wavelengths, electromagnetic lenses are used to focus the electrons on the sample. This allows operation at higher magnification (typically about 15,000x) and visualization of structures much smaller than can been seen under light microscopy. In addition, most TEM instruments are fitted with one or both of two supplemental accessories that allow a more detailed characterization of a particle than is possible under light microscopy:

> EDS (Energy dispersive spectroscopy) provides data on the elemental composition of each particle being examined. This makes it possible to distinguish organic particles from mineral particles, and also allows for distinguishing between different types of minerals.
>
> SAED (selected area electron diffraction) provides the x-ray diffraction pattern for each particle. This information is helpful in distinguishing organic from mineral particles, and in classifying the type of asbestos (e.g. chrysotile vs. amphibole).

A variety of different methods have been developed for use of TEM to analyze asbestos, including ISO 10312 (ISO 1995), AHERA (USEPA 1987), NIOSH 7402 (NIOSH 1994c) and EPA 100.2 (EPA 1994). These methods differ from each other mainly in the counting rules that specify the minimum length, width and aspect ratio requirements for counting a particle, and in the strategy for dealing with complex structures (bundles, clusters, matrix particles). At Libby, in order for a particle to be counted as asbestos, the length must be $\geq$ 0.5 um and the aspect ratio must be $\geq$ 3:1. Results are generally reported in units of structures per cubic centimeter of air (s/cc) for air samples, million fibers per liter (MFL) for water samples, structures per gram soil/sediment (s/g) for solid samples, and structures per gram of tissue (s/g) for biological samples.

When a sample is analyzed by TEM, individual asbestos structures are observed, and their size, shape, and mineral class are recorded. At Libby, the mineral classes are categorized as:

> LA Libby-class amphibole. Structures having an amphibole SAED pattern and an elemental composition similar to the range of fiber types observed in ores from the Libby mine (USGS,2001). This is a sodic tremolitic solid solution series of minerals including actinolite, tremolite, winchite, and richterite, with lower amounts of magnesio-arfedsonite and edenite/ferro-edenite.

OA Other amphibole-type asbestos fibers. Structures having an amphibole SAED pattern and an elemental composition that is not similar to fibers types from the Libby mine. Examples include crocidolite, amosite, and anthophyllite. There is presently no evidence that these fibers are associated with the Libby mine.

C Chrysotile fibers. Structures having a serpentine SAED pattern and an elemental composition characteristic of chrysotile. There is presently no evidence that these fibers are associated with the Libby mine.

NAM Non-asbestos material. These may include non-asbestos mineral fibers such as gypsum, glass, or clay, and may also include various types of organic and synthetic fibers derived from carpets, hair, etc.

Scanning Electron Microscopy (SEM)

Scanning electron microscopy (SEM) may be used to evaluate filtered samples of water, air or dust, and may also be used to evaluate asbestos fibers found in solid samples and biological samples. Like TEM, scanning electron microscopy (SEM) uses high energy electrons to irradiate the filter, but the image is generated from diffracted rather than transmitted electrons. Thus, an SEM image is more three-dimensional than a TEM image. Most SEM instruments are fitted with EDS but not SAED. Thus, it is normally possible to distinguish asbestos from non-asbestos particles and to classify asbestos particles by mineral type, but the determination is less definitive than by TEM. However, except in situations where fiber classification is difficult, differences between fiber counting results obtained by SEM and TEM will generally be minor (ISO 2002).

3.0 FATE AND TRANSPORT OF ASBESTOS IN THE ENVIRONMENT

Releases to the Environment

Asbestos occurs naturally in the environment and may be released to water and air from erosion and the weathering of natural deposits of asbestos-bearing rocks. However, asbestos is more likely to be released to the environment when these natural deposits are disturbed during processes such as mining operations. Asbestos is also released to the environment from the crushing, screening, and milling of ore, the processing of asbestos products, the use of asbestos-containing materials, and the transport and disposal of asbestos-containing wastes (ATSDR, 2001).

Transport and Deposition

Once asbestos fibers enter the environment from either a natural or artificial source, they tend to settle out of the air or water and deposit in soil and sediment (USEPA, 1977; USEPA, 1979). Asbestos fibers can be re-suspended into the air or water following soil and sediment disturbances. The rate at which asbestos particles settle out of the air or water depends on their size, and interaction with natural organic matter may increase their precipitation in aqueous environments (ATSDR, 2001; USEPA, 1979). Jaenicke (1979) reported that the residence time for a particle to remain airborne is shortest for the smallest (0.001 μm in diameter) and largest particles (100 μm in diameter), and greatest for particles ranging from 0.1-1 μm in diameter. Fibers in this size range could be transported l0ong distances in air.

In water, asbestos fibers may also travel long distances from the point of origin, depending on the surface chemistry and detailed mineralogy of the fiber (USEPA, 1979). Tailings from taconite mining containing asbestos fibers dumped into Lake Superior were detected in the drinking water of Duluth, MN, about 75 miles away from the point source (USEPA, 1979).

In soils, asbestos will tend to be retained at or near the surface. Movement of asbestos fibers through soils occurs during runoff or erosion. Asbestos particles in soil are fairly immobile, and particles less than 2 μm in diameter will tend to move at the same rate as clays (about 1-10 cm per 3,000-40,000 years) (USEPA, 1977). Asbestos fibers deposited in soil may be re-suspended in to the air by disturbing the contaminated soil (e.g. vehicular traffic and mining operations).

Transformation and Degradation in the Environment

Asbestos fibers are nonvolatile and insoluble; they are transported and distributed by air and water and tend to persist under typical environmental conditions (ATSDR, 2001). In general, asbestos is exceptionally resistant to thermal degradation and chemical attack. However, there are differences in the ability of different types of asbestos to persist in the environment. For instance, chrysotile asbestos is expected to degrade more readily than amphibole asbestos under certain environmental conditions (e.g. acidic environments) (ATSDR, 2001).

Air. Asbestos particles are not known to undergo any significant transformation or degradation in air (ATSDR, 2001).

Water. Asbestos fibers are relatively stable in water and are not prone to significant chemical or biological degradation. However, some asbestos fibers may undergo chemical alteration and adsorb additional organic agents. In general, asbestos does not volatilize from water surfaces. In water, at low pH, chrysotile asbestos may undergo some dissolution as magnesium hydroxide leaches from the outer brucite layer, but amphibole asbestos is expected to persist in aquatic environments virtually unchanged for long periods of time (ATSDR, 2001).

Soil. In general, asbestos fibers are not known to undergo significant transformation or degradation in soil (ATSDR, 1999). However, the World Health Organization (WHO, 1998) reports that chrysotile asbestos in surface soil will undergo chemical degradation producing profound changes in soil pH and releasing a variety of trace metals in to the environment (WHO, 1998).

4.0 ASBESTOS TOXICITY

A literature search was performed to identify studies that provide information on the effects of asbestos on ecological receptors. Attachment 1 provides a summary of the studies that were located. In general, toxicity data are very limited for most ecological receptors and absent for others. A summary of the information that is available is presented below.

Aquatic Invertebrates

To date, only three studies have been identified that provide data on the toxicity of asbestos in water to aquatic invertebrate species. In these studies the form of asbestos used in the exposures was either chrysotile or crocidolite and not LA. Adverse effects that have been observed in aquatic invertebrates exposed to asbestos in water under laboratory conditions include increased mortality and decreased growth and reproduction. Decreased siphoning activity, decreased growth and decreased reproduction (increased larval mortality) was observed in the adult asiatic clam (*Corbicula fluminea*) exposed to asbestos concentrations (chrysotile) as low as 10^4 fibers/L (Belanger et al.,1986). In larval *C. fluminera*, increased siphoning activity and decreased growth was observed at lower asbestos concentrations of 10^2 fibers/L (Belanger et al., 1986). The exposed larval *C. fluminera* accumulated in asbestos fibers in the gill and visceral tissue when exposed to 10^8 f/L and the fiber accumulations in gill tissue were associated with deteriorated gill tissue (Belanger et al., 1986). In brine shrimp, significant mortality was observed at exposures of $1.2x10^8$ fibers/L of chrysotile asbestos but not crocidolite (Stewart and Schurr 1980).

Fish

To date, seven studies have been identified exposing five different fish species to asbestos in surface water. In all of these studies, the form of asbestos was chrysotile. Adverse effects that have been observed in fish exposed to asbestos in laboratory water include decreased growth, increased mortality, and altered behavior. Adverse effects observed in larval Japanese medaka (*Oryzias latipes*) exposed to asbestos (chrysotile) included decreased growth, increased mortality, and increased thickening of the epidermis at concentrations of $1x10^6$ fibers/liter (L) and higher (Belanger et al., 1990). In Coho salmon (*Oncorhynchus kisutch*), significant adverse effects on behavior were observed at asbestos (chrysotile) exposures of $.5E+10^6$ fibers/L including adverse rheotaxic position and balance. Fish were found laying on their sides in the bottom of the tank by day 13 and by day 20 nearly all fish were displaying this behavior.

Record of Modification
to the
Troy Sampling and Quality Assurance Project Plan
Field Activities
TFO – 0 0 0 0 8 (numbered by Data Manager)

Instructions to Requester: **Fax to contacts at bottom of form for review and approval.**
File approved copy with Data Manager at the Troy Field Office (TFO).
Data Manager will maintain legible copies in a binder that can be accessed by TFO personnel.
If Modification is Temporary for a Single Parcel, Data Manager will scan this and place in parcel's electronic file.

Project Work Plan/QAPP (check one):

- ● Troy Asbestos Property Evaluation Work Plan
- ○ Other (Title and approval date):_____

Site-Specific Guidance/SOP (Number and Revision No.) (check one):

- ○ CDM-LIBBY-10, Current Revision (30-point dust sample collection)
- ○ CDM-LIBBY-05, Current Revision (30-point soil sample collection)
- ○ CDM-LIBBY-06, Current Revision (Visible Vermiculite Estimation)

Other (Title, Number/Revision): _____

Requester: Catherine LeCours Title: Project Manager
Company: Montana DEQ Date: 04/29/2008

Description of Modification (attach additional sheets if necessary; state section and page numbers of each document that are affected by the proposed modification): See following pages – revisit of select parcels from the 2007 inspections for confirmation and description of visible vermiculite in use areas and sampling of use areas

Field logbook and page number where Modification is documented (or attach associated correspondence):

Potential Implications of Modification: _____

Duration of Modification (check one):

- ○ Temporary
  - Date(s):_____ AD-_____
  - BD(s)-_____ TT(s)-_____
- ● Permanent (Proposed Text Modification Section) Effective Date: May 8, 2008

Proposed Text Modifications in Associated Document (attach additional sheets if necessary):_____

Data Quality Indicator (circle one) – Please reference definitions on reverse side for direction on selecting data quality indicators:

Not Applicable **Reject** **Low Bias** **Estimate** **High Bias** **No Bias**

Technical Review and Approval: Catherine LeCours Date: May 8, 2008
(DEQ Project Manager or designate)

EPA Review and Approval: Kathryn S. Hernacki Date: May 13, 2008
(*USEPA RPM or designate*)

RECORD OF MODIFICATION
TFO-00008

TO THE

TROY ASBESTOS PROPERTY EVALUATION WORK PLAN

CONFIRMATION AND DESCRIPTION OF VISIBLE VERMICULITE IN USE AREAS
AND
SAMPLING OF SPECIFIC USE AREAS
Troy Operable Unit Number 7
of the Libby Asbestos Superfund Site

Prepared for:

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
Remediation Division
P.O. Box 200901
Helena, Montana 59620

Contract Number 402026
Task Order Number 3 & 20

Prepared by:

TETRA TECH EM INC.
Power Block Building, Suite 612
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May 13, 2008

CONFIRMATION AND DESCRIPTION OF VISIBLE VERMICULITE IN USE AREAS AND SAMPLING OF SPECIFIC USE AREAS

As part of the Troy Asbestos Property Evaluation (TAPE) project 2008 field season, Tetra Tech will complete an inspection and/or collect a soil sample for approximately 462 Troy Operable Unit 7 (OU7) parcels that contain approximately 1,743 Use Areas for confirmation, semi-quantification, and description of visible vermiculite in the exterior soils and collection of soil samples from Specific Use Areas (SUA). **Table 1** provides the number of OU7 parcels and Use Areas to be inspected and sampled. The primary reasons for these inspections and additional sampling will be to address:

(a) the poor correlation between the PLM-VE analytical results and the visible vermiculite observations recorded at Use Areas in OU7 through the confirmation and semi-quantification of the presence or absence of visible vermiculite in Use Areas inspected in 2007,

(b) the need for soil samples from all SUAs as documented in Record of Modification TFO-00007 through the collection of samples from SUAs not previously sampled, and

(c) the accurate description of visible vermiculite observed and reported as "store purchased potting soil" in order to confirm the relationship between vermiculite observed in "potting soil" and analytical results in OU7 that may differ from that relationship as observed in OU4 through documentation of such descriptions during the confirmation and sampling identified above in items (a) and (b).

TABLE 1: Number of Troy Parcels and Use Areas to be Inspected and Sampled

Objectives	Number of Parcels	Number of Use Areas (excluding Non Use Areas)
One: Confirm and semi-quantify the presence or absence of visible vermiculite in Use Areas [item (a) above] and accurately describe the visible vermiculite if present [item (c) above]	462	1,743
Two: Collect soil samples from SUAs not sampled in 2007 [item (b) above]	115	144
Total Unique Numbers (not additive; some parcels/Use Areas under both objectives)	**462**	**1,743**

Two objectives were developed to determine the types and numbers of parcels and Use Areas to inspect and sample.

Objective One: **Confirm and semi-quantify the presence or absence of visible vermiculite in Use Areas and accurately describe the visible vermiculite if present.** The number of parcels to inspect was derived by subtracting the sum of the parcels that would be revisited because they meet one of the emergency removal criteria[1] requiring a pre-design inspection (PDI) plus the parcels with only Non Use Areas (essentially undeveloped properties) from 535, the total number of parcels inspected during 2007. The equation below provides a mathematical expression for this determination:

Parcels for Inspection = 535 – (Parcels meeting removal criteria[1] + Parcels with only Non Use Areas)

Objective Two: **Collect soil samples from SUAs sampled in 2007.** Based on preliminary data from 2007, DEQ, in consultation with EPA, modified the sampling protocol to include a soil sample from all SUAs, regardless of presence or absence of visible vermiculite. (Please see Record of Modification TFO-00007.) Therefore, DEQ has directed Tetra Tech to collect soil samples from SUAs not sampled in 2007.

Tetra Tech's approach for completing these objectives includes training six Tetra Tech TAPE field staff plus three TAPE managers (the Field Team Leader and two quality assurance [QA] managers) to accurately recognize, identify and semi-quantify visible vermiculite in exterior soils, if present. These nine Tetra Tech individuals will be trained by two experienced CDM field persons for approximately four days and will be known as Tetra Tech's Visible Vermiculite (VV) Core team members. The six TAPE field staff will be in the field more than 50 percent of the field season and four of the six will be working on TAPE inspections 100 percent of the time. The four days of training inspections will provide the opportunity for each Tetra Tech VV Core team member to work side by side with CDM, asking questions and learning the skills necessary to identify and semi-quantitatively assess the amount visible vermiculite present. On Day 1, the nine Tetra Tech VV Core team members will meet with CDM staff for up to two hours to go over the basics and get ready for first site visit. The group will be divided into two teams with one CDM person for each team. Each team will visit two to three Troy parcels on Day 1. Days 2, 3, and 4 will have similar schedules with each of the two teams visiting two to three Troy parcels per day depending on the size of parcels and the number of Use Areas. Tetra Tech will identify the training parcels, in consultation with CDM, and schedule the inspections with the property owners. The Troy parcels visited during the four training days will include a majority of parcels where visible vermiculite was recorded during the 2007 TAPE inspections. There will be a mixture of parcels with visible vermiculite at multiple locations and some with visible vermiculite only in distinct, small areas. At least

[1] Concentration of Libby asbestos in soil greater than or equal to 1 percent of sample volume.

two Troy parcels (one for each team) will have no exterior triggers for cleanup. The 2007 inspection and analytical results for these Troy parcels will not be provided to the Tetra Tech VV Core team members prior to the training inspections so that there will be no preconceived ideas or biases. Later during the 2008 field season, qualified CDM staff may periodically spend one or two days with the TAPE inspection teams to ensure the TAPE teams are identifying and documenting visible vermiculite consistent with CDM-LIBBY-06 (Appendix B to the TAPE Work Plan). A TAPE field team schedule will be provided to Volpe and CDM so audits may be planned accordingly.

After Tetra Tech completes approximately 100 parcel inspections for Objective One, the visible vermiculite results and descriptions from 2008 will be summarized and compared to the results of the visible vermiculite inspections and descriptions of 2007 from those same Use Areas. The results' comparisons will be reported to the DEQ and EPA and a meeting will be scheduled with all parties to determine the necessity of continuing with the remaining Objective One inspections. Tetra Tech will inspect all parcels identified for Objective Two, and complete all activities in Objective One for those parcels, regardless of the results of the comparison described above. Tetra Tech will continue to conduct the 2008 TAPE inspections for Troy parcels, including inspections of Use Areas for visible vermiculite and the description of such vermiculite, as described in the TAPE Work Plan (Tetra Tech, July 2007) as modified. Tetra Tech will bring on additional staff, if needed, to complete the necessary number of scheduled 2008 TAPE inspections, plus the visible vermiculite inspections and sampling of Use Areas. Tetra Tech will ensure that all new 2008 TAPE inspection teams have at least one Tetra Tech VV Core team member to verify the presence or absence of visual vermiculite and describe the vermiculite in the Use Area soils. Tetra Tech believes that all scheduled TAPE 2008 inspections and these additional inspections and sampling will be completed on time and within the estimated 2008 budget because of the following reasons and protocol modifications to Tetra Tech's 2008 field efforts:

1. Tetra Tech will staff the 2008 field team with approximately 60 percent (6 out of 10) dedicated and season-long field team members who will reside in Troy for the entire field season. Dedicated field staff will provide more experience and consistency for making visual field determinations, such as the identification of visible vermiculite in Use Area soils.
2. TAPE inspections during 2007 typically averaged 2 to 4 hours to complete (depending on size of parcel, number of inspectors [2 or 3], and number of buildings). Throughout the 2007 summer field season there were many shorter periods of time (30 to 90 minutes) when field crews did not have a scheduled TAPE inspection, but were able to "fit in" a less labor-intensive exterior only TAPE inspection (for example, open space, undeveloped properties) or re-visit parcels due to protocol and data collection modifications. The majority of these smaller, easily scheduled, short, fill-in efforts were completed during 2007. Completing the activities for Objectives One and Two may take from approximately 20 minutes up to a few hours (depending on size of parcel, and travel time to and from the site) and will be easy to fit in and complete on a regular fill-in basis.

Use Areas, except Non Use Areas, will be inspected for visible vermiculite in the soil and surface materials, semi-quantitatively assessed, and sampled (if necessary). For each inspection, the field team will bring along: (1) copies of the field sketches from 2007; (2) field forms for recording inspection data; and (3) field equipment to conduct the visible vermiculite inspection and to collect the soil samples.

Use Areas will be inspected and sampled using the same overriding procedures as the 2007 TAPE inspections, as modified, except a hand lens or magnifying glass will be used to better observe and identify small pieces of vermiculite in the Use Area soils or surface materials Each soil aliquot will be examined for the presence of visible vermiculite and the amount of vermiculite will be semi-quantified as none, low, intermediate, or high using the procedures defined in CDM-LIBBY-06 (Appendix B to the TAPE Work Plan) and accurately described. The Use Area will be closely inspected for the presence of visible vermiculite, but the soil aliquot will not be placed in a plastic bag or bowl for compositing or sampling, unless necessary to meet Objective Two. After careful inspection for visible vermiculite, each soil aliquot will be returned to its approximate original location.

To minimize field recording time and file transfer time, the inspection results (none, low, intermediate, high, description, and sample identification number) will be recorded in a tabular format on field forms created specifically for these activities. The PDAs will not be used to enter data and GPS locations will not be collected for these inspections. At the end of each day that an inspection is performed, the tabulated results will be entered into Scribe by the sample database coordinator. A second inspection property sketch will be prepared for TAPE parcels that have Use Area changes (including Use Areas that no longer exist), different Use Area boundaries, or if visible vermiculite was observed from new or different locations during the inspection. If the parcel Use Areas are identical to those shown on the original 2007 TAPE inspection sketch and no new visible vermiculite is observed, only the notes and details of the inspection will be recorded. The 2008 inspection field team may elect to photo-document specific conditions or changes to the parcel, especially if visible vermiculite is found during the inspection. All new photographs will be recorded on the field forms, downloaded and saved into the Troy parcel electronic file. All inspection field forms will also be scanned and saved into the Troy parcel electronic file. Tetra Tech will manage the 2008 inspection data and any changes to the 2007 inspection data for visible vermiculite and sampling according to the approved TAPE Data Management Plan.

PropertyID	PropertyDate1	q_UseArea_hits
AD-200334	5/4/2007	
AD-200416	5/4/2007	UA 364 - need sqft
AD-200839	5/8/2007	
AD-200448	5/9/2007	
AD-200611	5/17/2007	
AD-200533	5/21/2007	
AD-201185	5/24/2007	
AD-200594	5/31/2007	
AD-201163	5/31/2007	
AD-200038	6/4/2007	
AD-200827	6/5/2007	
AD-200308	6/6/2007	
AD-200041	6/7/2007	
AD-200087	6/7/2007	
AD-200433	6/7/2007	
AD-200534	6/12/2007	
AD-200521	6/13/2007	
AD-200057	6/14/2007	
AD-200061	6/14/2007	
AD-200414	6/14/2007	
AD-200480	6/15/2007	
AD-200790	6/15/2007	
AD-200720	6/18/2007	
AD-200314	6/19/2007	
AD-200316	6/20/2007	~~UA - 200742 ? in Scribe, not in log or sketch~~
AD-200413	6/20/2007	
AD-200332	6/21/2007	
AD-200333	6/21/2007	UA 604 - drive
AD-200838	6/21/2007	
AD-200315	6/25/2007	✓ = Logbook UA description,
AD-200266	6/26/2007	SQFT, + V.V. match w/
AD-200737	6/26/2007	Scribe (what was entered in PDAs) - 100% match
AD-200421	6/27/2007	
AD-200550	6/27/2007	How many wrong?
AD-200491	6/28/2007	in %age
AD-200755	6/30/2007	
AD-200055	7/2/2007	
AD-200865	7/9/2007	

So use area is a hit so we make sure we have 100% accuracy

AD-200355	✓*	7/10/2007	*UA-200920 : no sqftage in logbook; Scribe says 20 – logbook does not take limited sqftage. (q_useArea_hits)
AD-200464	✓*	7/10/2007	* no sqftage for UAS written in logbook, but in Scribe ↑ otherwise 100%
AD-200141	✓	7/11/2007	
AD-200143	✓	7/11/2007	
AD-200734	✓*	7/11/2007	* → Logbook does not have SQFT for UAS, (MB) but Scribe has SQFT
AD-200846		7/11/2007	UA-201087 should be SUA, not CUA, in Scribe.
AD-200023		7/12/2007	UA-201095 should be SUA, not CUA, in Scribe.
AD-200917	✓	7/12/2007	
AD-200915	✓	7/13/2007	
AD-200852	✓	7/16/2007	
AD-201014	✓	7/16/2007	
AD-200052	✓	7/17/2007	
AD-200600	✓	7/17/2007	
AD-200437	✓	7/18/2007	
AD-200458		7/18/2007	UA-201169 should be SUA, not CUA, in Scribe UA-201168 should be CUA, not SUA, in Scribe > 3 changes in Scribe
AD-200911	✓*	7/18/2007	UA-201174 should be SUA, not NUA AND SQFT = 100 not 1000 * → no SQFT written in logbook, but they are in Scribe
AD-200251	✓	7/19/2007	
AD-200165	✓	7/20/2007	
AD-200698	✓	7/20/2007	
AD-200488	✓	7/24/2007	
AD-201495	✓	7/24/2007	
AD-200654	✓*	7/25/2007	* no SQFT written in Logbook, but in Scribe
AD-200922		7/25/2007	UA-201228 should be SUA, not CUA, in Scribe (1 change)
AD-200470		7/26/2007	UA-201359 Should be SUA, not CUA, in Scribe (1 change)
AD-200969	✓	7/26/2007	
AD-200075		7/30/2007	↓ TO FINISH
AD-200255		7/30/2007	
AD-200628		7/31/2007	
AD-200946		7/31/2007	
AD-200947		7/31/2007	
AD-200950		8/2/2007	
AD-200407		8/6/2007	
AD-200665		8/6/2007	
AD-200681		8/6/2007	
AD-201098		8/6/2007	
AD-200652		8/7/2007	
AD-200818		8/7/2007	
AD-200847		8/7/2007	
AD-201015		8/7/2007	

Point of Contact Form

Troy Asbestos Property Evaluation

revised 04-28-2007

To be completed by Field Team

AD-number: BD-number: Date: / /

1. Please list all individuals who live or work at this home/business. Place a check mark next to the Primary Contact or current occupant who can be contacted at a later time.

Primary Contact	First Name	Last Name	Date of Birth (MM/DD/YYYY)	Circle One	Circle One
☐			/ /	Resident Employee	Part Time Full Time
☐			/ /	Resident Employee	Part Time Full Time
☐			/ /	Resident Employee	Part Time Full Time
☐			/ /	Resident Employee	Part Time Full Time
☐			/ /	Resident Employee	Part Time Full Time
☐			/ /	Resident Employee	Part Time Full Time
☐			/ /	Resident Employee	Part Time Full Time
☐			/ /	Resident Employee	Part Time Full Time
☐			/ /	Resident Employee	Part Time Full Time
☐			/ /	Resident Employee	Part Time Full Time

2. Please provide following information for the Primary Contact who was designated in Section A:

Daytime Phone Number:	
Physical Address:	
Mailing Address:	
Mailing City:	
Mailing State:	
Mailing Zip:	

3. Is the Primary Contact designated in Section A the owner of this property? Yes No